Original Article

Prevalence and Related Factors of Postpartum Depression among Jordanian Mothers with a History of COVID-19 during Pregnancy or After Childbirth in a Developing Country

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Abstract

Background: The magnitude of postpartum depression in Jordan during the COVID-19 pandemic is under-documented, and little is known about its potential social, demographic, and clinical correlates. This study aimed to explore the prevalence and related factors of postpartum depression among Jordanian mothers with a history of COVID-19 during pregnancy or after childbirth. **Materials and Methods:** This cross-sectional descriptive study was carried out in March-June 2021 among a convenient sample of 109 women with a history of COVID-19 during pregnancy or after childbirth, who were at a leading hospital equipped to care for COVID-19 cases in North Jordan. An online survey using the Edinburgh Postnatal Depression Scale (EPDS) was used to collect information from mothers with a history of COVID-19-positive tests. **Results:** Among the total number of women who participated in the study (n = 109), 73 women had postpartum depression. The prevalence of postpartum depression in the present study was 67%. In addition, the study found a positive statistically significant correlation between EPDS scores and being a smoker, delivery method, experiencing severe COVID-19 symptoms, and being hospitalized. **Conclusions:** During the COVID-19 pandemic, women had a high level of postpartum depression. It would be necessary to follow further the confirmed cases of COVID-19, and mothers should be screened for depressive symptoms during pregnancy and followed up for antenatal and postnatal care.

Keywords: *Family nurse, maternal child health, public health, reproductive health*

Introduction

Postpartum depression is a type of depression that occurs after having a child. It affects up to 15% of mothers. Mothers with postpartum depression experience emotional highs and lows, frequent crying, fatigue, guilt, and anxiety and may have trouble caring for their children.[1] According to the National Institute of Mental Health (NIMH), mothers with postpartum depression often experience feelings of extreme sadness, anxiety, exhaustion, crying more than usual, aggressiveness, and angry feelings and they may withdraw from loved ones.[2] Furthermore, postpartum depression is associated with reducing mental and physical health.[3] Mothers with postpartum depression commonly feel numb or disconnected from their baby, worry about hurting the baby, feel guilty about not being a good mom, or doubt their ability to care for the baby. 1 Recent literature has found an increase in postpartum depression among mothers during the COVID-19 crisis.[4] This is due to isolation, and quarantine measures that are often required in suspect zones to mitigate viral transmission.[5] Proactive access to these groups of women and early detection is a key protective factor.[4] There is insufficient data in Jordanian contexts regarding maternal psychological health, especially following the COVID-19 crisis and among mothers with a history of COVID-19 infection during pregnancy or after childbearing. This study aimed to explore the prevalence and related factors of postpartum depression among Jordanian mothers with a history of COVID-19 during pregnancy or after childbirth.

Materials and Methods

In 2021, an analytical descriptive study was conducted in the main hospital responsible for caring for COVID-19 cases in North Jordan and providing obstetrics and

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gynecology services. The medical information of mothers was collected through access to the hospital registration system. The online survey link was sent by text messages to mothers who gave birth with a history of COVID-19 during pregnancy or after childbirth. The questionnaire was filled out online due to preventive actions implemented by the Jordanian government, which limited the interactions and banned all forms of close communication, as well as to save time and effort. The study used three tools: 1) Collection of general information about demographic characteristics (age, the place of residency, educational level, family monthly income, and maternal employment status), general health history data (chronic diseases, parity), and current pregnancy characteristics (gestational age at delivery time, pregnancy complications). 2) Collection of information about the history of getting coronavirus infection (gestational age at the time of getting infected, symptoms, hospital stay and its length, intensive care unit (ICU) care stay, and requesting of medications). 3) Collection of information around mental health status using the Edinburgh Postnatal Depression Scale (EPDS), which includes ten screening questions that can tell if a patient is experiencing symptoms that are typical in women with depression during pregnancy and in the year after a child is born.[6,7] Each question has four responses that range from zero (the lowest score) to three (the highest score). The total scale yields a score between zero and 30. The EPDS is the most widely used scale for determining the presence and severity of depressive symptoms during pregnancy and postpartum.[6] The EPDS has been validated for use in a postpartum population, and it is both sensitive (with a sensitivity of 85.7%) and specific in detecting depressive symptoms in mothers suffering from postpartum depression. A cut-off score ranging from ten to 12 could be used.[6,8] Women who receive a score of 12 or higher should be considered depressed.[7] In our study, we used 12 as a cut-off point for depression.

Statistical analysis was performed using the application package IBM SPSS 26 (SPSS: An IBM Company, New York, USA). The data distribution was evaluated with the Shapiro–Wilk test. Various algorithms of statistical analysis were used depending on the type of distribution of the variables. Understanding the relationship between the key demographic variables and implications of coronavirus infection was examined using the Spearman rank correlation test. All statistical tests were two-sided, and a p value < 0.05 was considered statistically significant.

Ethical considerations

The Institutional Research Board and Human Research Committee have approved this study (22/139/2021, 22.3.2021). The consent form was prepared to get the agreement of the participants. The consent form excluded the possibility of unjustified deception, undue influence, and intimidation. The agreement was signed only after prospective participants were adequately informed. Their decision to participate did not affect the doctor–patient relationship or any other benefits to which they are entitled. Personal information about participants never be disclosed, and the data collected remain confidential. All participants were reassured about the confidentiality of their personal information.

Results

The questionnaire link was sent to mothers with a history of COVID-19 infection during pregnancy or postpartum period and who gave birth to their children between March 2021 and June 2021, at the main hospital equipped caring for COVID-19 cases in North Jordan, and it provides obstetrics and gynecology services. There were nearly 600 pregnancies infected with COVID-19 and visited the hospital for healthcare services from March 2020 to June 2021. About 200 cases gave birth in the targeted hospital in March–June 2021, and they were contacted. Finally, 109 mothers were included in the study who accepted to participate and filled out the study questionnaire. The majority of participants were from Northern Jordan (n = 95, 87%), and more than two-thirds (n = 67, 62%) were between 26 and 35 years of age, and most of them had a college or university education (n = 74, 68%). While 76 (70%) are not working, the characteristics of the mothers are shown in Table 1. The mean (SD) of total EPDS scores was 14.5 (5.2), and 67% of the mothers had clinical depression symptoms (EPDS scores ≥13) [Table 1]. The current study found a positive statistically significant correlation between EPDS scores and being a smoker (p value = 0.032*), pregnancy trimester at the time of being infected (p value = 0.039*), method of delivery (p value = 0.034*), experiencing severe COVID-19 symptoms (p value = 0.042*), and being admitted to a hospital due to COVID-19 including duration of hospitalization (p value = 0.022*) duration of admission to ICU (p value = 0.032*). On the other hand, no statistically significant correlation has been found between EPDS scores and age, residency, educational level, the number of children, chronic illness, monthly income, work, having prenatal complications, or gestational age at the time of delivery. [See Table 2]. Ethical Approval was obtained [22/139/2021, 22.3.2021].

Discussion

The purpose of this study was to explore the prevalence and risk factors associated with postpartum depression among Jordanian mothers with a history of COVID-19 during their pregnancy or after childbirth. This study examined an important topic around the psychological health of mothers with a history of COVID-19 during their pregnancy or after childbirth during the first wave of the COVID-19 pandemic in Jordan, 2020/2021. The current study found that a very high proportion (more than two-thirds) of mothers who had

Table 1: The sociodemographic characteristics (*n*=109)

Characteristic	*n* (%)
Living Place	
Living in North State	95 (87.16%)
Not Living in North State	14 (12.84%)
Age	
<25	17 (15.60%)
26–35 years old	67 (61.47%)
36–45 years old	23 (21.10%)
>45	2 (1.83%)
Level of education	
Basic education	10 (9.20%)
Secondary education	25 (22.90%)
College/university education	74 (67.90%)
Having chronic illness	
Having no chronic disease	92 (84.40%)
Cardiac disease	2 (1.83%)
Respiratory disease	3 (2.75%)
Hypertension	3 (2.75%)
Thyroid disease	3 (2.75%)
Others	6 (5.50%)
Having work	
Work	33 (30.28%)
Don't work	76 (69.72%)
Being a smoker	
Not a smoker at all	64 (58.72%)
Current smoker (more than 1 pack/day)	3 (2.75%)
Current smoker (less than 1 pack/day)	2 (1.83%)
Shisha smoking	40 (36.70%)
Having prenatal complications	
Don't have any complication	62 (56.88%)
Hypertension	16 (14.68%)
Gestational diabetes mellitus	11 (10.09%)
Thromboembolism	1 (0.92%)
Placenta previa	2 (1.75%)
Threatened abortion	7 (6.42%)
Others	10 (9.20%)
Method of delivery	
Cesarean section	70 (64.22%)
Vaginal delivery	39 (35.78%)
Gestational age at the time of delivery	
Preterm (before 9 months)	7 (6.42%)
Term (9 months)	102 (93.58%)
The first time I got COVID-19	
Before delivery_before 37 weeks of pregnancy	13 (11.93%)
Before delivery_37 weeks or more of pregnancy	52 (47.71%)
First 40 days after delivery	26 (23.85%)
>40 days after delivery	18 (16.51%)
Symptoms of COVID-19	
Lung infections	11 (10.09%)
Fever	37 (33.94%)
Chronic cough	12 (11.00%)
Throat infection	49 (44.95%)
Need medication	
Yes	22 (20.18%)
No	87 (79.82%)
Duration of hospitalization	
No hospitalization	90 (82.57%)
Hospitalization <14 days	17 (15.60%)
Hospitalization >14 days	2 (1.83%)
Duration of hospitalization to Intensive Care Unit	
No hospitalization	105 (96.33%)
Hospitalization <10 days	2 (1.83%)
Hospitalization >10 days	2 (1.83%)
Clinically elevated symptoms of depression during COVID-19	
Had clinically elevated symptoms of depression	73 (66.97%)
Did not have clinically elevated symptoms of depression	36 (33.03%)

a history of COVID-19 had clinical depression symptoms. While a past meta-analysis and reviews concerning the pre-pandemic period indicated that postpartum depression affected almost 17% of women.[6] A national previous online survey indicated that postpartum depression among Jordanian women was high at (53%).[9] Mothers with a history of COVID-19 during pregnancy or after childbearing had a high rate of postpartum depression (67%) in our study that was conducted in northern Jordan during the COVID-19 first-wave epidemic. Therefore, it is necessary to follow the mental health status of mothers with a history of COVID-19 infection during pregnancy or after childbearing. Furthermore, there may be an impact of the restrictions associated with closure on mental health, which needs further investigation. Our study was conducted in Irbid Governorate in the north where the first area of the spread of COVID-19 was in Jordan, and there where the complete closure of Irbid and its isolation from the rest of the country. Villages and districts within the same governorate have also been isolated in an attempt to control the spread of the virus. The restrictions on life services continue for months.[10] In particular, postpartum depression was a common condition in one in nine women before the COVID-19 pandemic, and it now affects many more women.[11,12] The issue of caring for the health of pregnant mothers is very important in these circumstances. Of course, mothers need to assess their knowledge of the disease and its impact on their psychological and physiological health.[10,12] Past reviews conclude that the COVID-19 pandemic has an impact on pregnant women's psychological health with depression as one of the most common changes.[12] Consequently, women who gave birth during the COVID-19 pandemic possibly will face significant psychological and emotional problems and they should be considered an at-risk population that might need psychological support. Accordingly, in our study, examining the factors associated with postpartum depression through the COVID-19 pandemic period, the present study indicated that being a smoker was associated with experiencing postpartum depression. Additional factors

Table 2: The correlations between key demographic variables and Edinburgh Prenatal/Postnatal Depression Scale (EPDS) (*n*=109)

Variables	Correlation Coefficient	*p* (2-tailed)
Age	0.07	0.471
Educational level	0.02	0.876
Number of children	0.14	0.139
Number of chronic diseases	-0.02	0.838
Monthly income	0.09	0.381
Having work	-0.07	0.482
Being a smoker	0.18	0.032*
Prenatal complications	0.07	0.468
Pregnancy trimesters	0.19	0.039*
The usual method of delivery	-0.21	0.034*
Gestational age at the time of delivery	-0.09	0.333
The severity of COVID-19 symptoms	0.34	0.042*
Duration of hospitalization	0.22	0.022*
Duration of admission to Intensive Care Unit	0.21	0.032*

*$p<0.05$ considered as statistically significant. Using Spearman rank correlation test

were the method of delivery, time of pregnancy when getting COVID-19, the severity of experiencing COVID-19 symptoms and being admitted to a hospital or ICU. We also know that smoking is associated with increased pregnancy complications.[13] As for the impact of COVID-19, smoking is also associated with respiratory health problems, as the severity of symptoms increases.[14] Acute cases and intensive care admissions are linked to the deterioration of the health condition and the occurrence of complications for COVID-19.[15] Anxiety and depression are associated with worse health conditions.[16] Other factors associated with postpartum depression through the COVID-19 pandemic period were described in a study that was conducted in Turkey, and they comprised higher education levels, low income, prior psychiatric disease, and having newborn needs Neonatal Intensive Care Unit (NICU) were related significantly to postpartum depression.[17] A study from China described that persistent fever, poor social support; worries about diminishing COVID-19, and certain precautionary measures were connected significantly to postpartum depression.[18] Socio-demographical characteristics, health history, smoking, economic status, hospitalization, and social support are factors that need further consideration amongst healthcare stakeholders and health professionals for future prevention of COVID-19 impacts on mental health.[17,18] The COVID-19 crisis has revealed the need to develop the healthcare sector while employing modern technology and applications to continue health education and follow-up with patients.[19] Early detection can be achieved by monitoring mothers after birth. Developing and implementing a smartphone application can help facilitate guidance for postpartum mothers.[20]

The limitations of this study are summarized as it was conducted in a single hospital in northern Jordan and could not generalize the results to the entire country. In addition, due to COVID-19 restrictions on travel between Jordanian states at the time of the study, we were unable to reach more hospitals in the central or southern states during that period. However, this research provides preliminary evidence to support future research and essential information for initiating intervention programs.

Conclusion

In Irbid Governorate in northern Jordan and during the COVID-19 pandemic, there was a significant prevalence of postpartum depression among mothers with a history of COVID-19 during pregnancy or after childbirth. More highlighted risk factors associated with being a smoker, childbearing, receiving COVID-19, experiencing COVID-19 symptoms, and being admitted to a hospital or ICU had relationships with postpartum depression. Furthermore, healthcare authorities must devise ways to offer suggestions and activities to reduce the emergence of post-partum depression during the COVID-19 pandemic. Mothers with COVID-19 infection should be screened for depressive symptoms during pregnancy and followed up for postnatal. Healthcare sectors should provide counseling services and a hotline for pregnant mothers with COVID-19 infection. Healthcare professionals, especially nurses and midwives, have an essential role in this.

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Conflicts of interest

Nothing to declare.

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