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Title: Comparing trends of postpartum depression screening scores during and before the COVID-19 pandemic

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Abstract

Introduction:

Postpartum depression includes major and minor depressive disorder affecting women in the time period after childbirth. The studies reviewed in our literature found that the COVID-19 pandemic has increased the risk of postpartum depression for women. Our study location, the Rio Grande Valley is one of the hardest hit locations by the COVID-19 pandemic in the United States. Our patient population is also one with the higher risk factors for postpartum depression. As such, we are expecting the psychological impact of the pandemic to be even more magnified and thus, actions need to be taken to support the vulnerable population of postpartum women.

Objective:

This project is a retrospective study for the period between April 1 - December 1, 2020 to the same time period of 2019. Our objective is to evaluate the trends in total Edinburgh Postnatal Depression Scale (EPDS) scores over these months and to correlate the trends in scoring of the individual questions in the screening questionnaire to parameters of COVID disease in Hidalgo county over the same time periods.

Research Plan and Methods:

All postpartum patients who delivered at the Women's Hospital at Renaissance are routinely administered the EPDS. This questionnaire can be collected from the patient's electronic record by the Business Informatics team at DHR without including patient identifiers. Descriptive analysis of the data will be performed. Statistical analysis will be performed using SPSS.

Results and Conclusion:

Results from the analysis of trends in EPDS scores will be presented and analytic issues will be discussed. No conclusion can be drawn at this time.

Introduction

Postpartum depression (PPD) includes major and minor depressive disorders affecting women in the 12-month period after childbirth. This period can be challenging, often resulting in "lack of sleep, relationship tensions, and feelings of isolation" and leading to development of mood disorders for many women. ¹ The prevalence of PPD is uncertain as the estimates vary greatly between different communities and studies.

PPD is one of the most common and serious mental health problems affecting postpartum women.² Its devastating effects impact not only maternal health but also neonatal outcomes. For instance, postpartum depression can affect breastfeeding effort, bonding between mother and child is associated with abnormal cognitive and psychological development in the offspring. Thus, postpartum depression is a debilitating disease with detrimental consequences not only to the women but also to her children, her family, and society.

There are many identified risk factors for postpartum depression, such as pre-existing mental health disorders, traumatic birth experience, low level of social support, and stressful life events. A 2020 study concluded that, “exposure to environmental stressors, such as natural disasters, can amplify perinatal mood disorders and even have intergenerational impacts on child health and development outcomes”.³

Several studies have recognized maternal psycho-emotional vulnerability during catastrophic events.^{4,5} “Trauma, terrorist attack, and natural and man-made disasters such as earthquakes, tsunamis, and Chernobyl were predictors of postpartum depression symptoms for postpartum mothers”.^{5,6,7} Furthermore, it was found that “after the outbreak of severe acute respiratory syndrome (SARS) in 2003, both healthcare workers and people who were self-quarantined exhibited symptoms of post-traumatic stress disorder”.^{4,8} The COVID-19 pandemic proves to be a stressful life event for many pregnant and postpartum women in a variety of ways, and thus the effect of stress caused by COVID-19 pandemic on pregnant women should not be ignored.⁴

Although current studies are exploring the impact of COVID-19 on general population’s mental health, less is known about the mental health implications specifically related to postpartum mental health during COVID-19.³ Nevertheless, some data does exist regarding post-partum depression during the COVID-19 pandemic. The 30 studies reviewed in the literature review done for this study were conducted among many populations around the world and yielded mostly similar findings, that the pandemic has increased the risk of postpartum depression for women.

The purpose of this study is to evaluate the incidence of increased risk for post-partum depression among women in Hidalgo county delivering during the COVID-19 pandemic as compared to the risk among women delivering before the COVID-19 pandemic.

Our study location, the Rio Grande Valley of Texas is one of the hardest-hit locations by the COVID-19 pandemic in the United States. Not only does the hospital have the highest volume of obstetric patients in the area, but our patient population is also one with the higher risk factors for postpartum depression, as the majority of our patients are of lower socioeconomic status. As such, we are expecting the psychological impact of the pandemic to be even more magnified, and thus, actions need to be taken to support the vulnerable population of postpartum women. We hope our studies will contribute to the efforts to support postpartum women in tackling the psychological impact of this pandemic.

Materials & Methods

Eligible women for our study were healthy women above the age of 18 who delivered at the maternity ward of DHR's Women's Hospital at Renaissance in McAllen, Texas.

All postpartum patients who deliver at DHR's Women's Hospital at Renaissance are routinely administered the physical version of the Edinburgh Postpartum Depression Scale (EPDS) during their postpartum stay in the hospital. At DHR's Women's Hospital at Renaissance, the responses for the EPDS questionnaire are collected from the patients and entered into Cerner electronic medical records by the nurses.

EPDS is a screening tool established in 1987 by Cox et al. and this self-completed questionnaire is comprised of 10 questions concerning the subject's mood.⁹ It was created for diagnosing pregnant and post-partum women who are at high risk for depression and is extensively used based on the American College of Obstetrics and Gynecology (ACOG) recommendations.^{10,11} The scores for each question are summed, and a final overall score of <10 is defined as low risk for depression. A score of ≥ 10 delineates a person at risk for depression and a score of ≥ 13 delineates a person at higher risk for depression⁹

A 2016 study established severity cut-off scores for the Edinburgh Postnatal Depression Scale (EPDS): none or minimal depression (0–6), mild depression (7–13), moderate depression (14–19), and severe depression (19–30).¹² These severity cut-offs provide incremental information regarding the level of depressive symptoms in patients and were used in our study.

For this study, the Business Informatics team at DHR collected these questionnaires from the patient's electronic record without including patient identifiers. Once the data is released to the research team, results for the women delivering during the COVID-19 pandemic, and the results for women delivering at the same medical center before the COVID-19 pandemic for the time period April 1 - December 1 of 2019 and the same time interval for 2020 will be compared.

The average total EPDS score will be analyzed for each month and compared between 2019 and 2020. The same will be done for individual questions of the screening. The trends in the scoring of the individual questions in the screening questionnaire to parameters of COVID disease in Hidalgo county over the same time periods will then be correlated.

Literature Review Methods

Selection of articles for the literature review was conducted on PubMed up to the date of December 22, 2020, using the algorithm ((covid) OR (pandemic)) AND ((postpartum) OR (postnatal) OR (post-partum) OR (post-natal) OR (perinatal)) AND ((depression) OR (depressive) OR (depress*)). Fifty-one articles were found. The authors read through all the abstracts and selected articles that included risk of perinatal depression as part of their analysis. The authors also reviewed the reference section of these articles and identified additional relevant articles to be included. This resulted in 30 articles that were included in the literature review. Of those, 12 articles assessed risk of depression during pregnancy, 9 articles assessed risk of depression

postpartum, 7 articles addressed risk of depression in both periods and there are 2 meta-analyses.

Results

This is an ongoing study, and the results are pending for the time being. Results from the analysis of trends in EPDS scores will be presented and analytic issues will be discussed later. No conclusion can be drawn at this time. While this study has not yet yielded results, the literature review conducted for this study can shed some light into what can be expected to be found, as discussed under the “Discussion” section.

Discussion

The Edinburg Postpartum Depression Score is the most commonly used to assess perinatal depression in the studies, as mentioned in 21 out of 31 articles reviewed. Other tools used included the PHQ-9 (Farrell, Bo), PHQ-2 (Farewell, Bender), IES-R (Saccone), Center for Epidemiologic Studies-Depression measure (Liu), Beck Depression Inventory (Lopez-Morales) or questionnaires designed specifically for the particular studies (Parra-Saavedra).

The studies were conducted in a wide variety of countries around the world, as shown in Table 1.

Table 1: Studies Reviewed based of Country

Country	Number of articles	Studies
Italy	5	Zanardo, Saccone, Spinola, Molgora, Ostacoli
The United States	5	Farewell, Thayer, Bender, Gildner, Liu
China	4	Wu, Chen, Bo, Liang
Turkey	4	Durankus, Oskovi-Kaplan, Guvenc
Israel	2	Sade, Pariente
Japan	1	Matsushima
Canada	1	Lebel
Qatar	1	Farrell
Colombia	1	Parra-Saavedra
Pakistan	1	Shahid
Serbia	1	Stojanov
Hong Kong	1	Hui
Argentina	1	Lopez-Morales
Mexico	1	Medina-Jimenez

The “postpartum period” varied greatly across studies, ranging from within two days up to twelve months after delivery. All but two of the studies were cross-sectional studies, including both cohort and case-control studies. The prevalence of postpartum depression reported in the

studies reviewed ranging from 14.4% to 44%. The other two studies are meta-analysis and systematic review. A systematic review and meta-analysis of 8 studies by Hessami et al. found that the “overall pooled EPDS score was higher among women during pandemic vs non-pandemic” although the difference was not statistically significant. Another meta-analysis by Yan et al. reported depression prevalence of 31% and a relative risk for peripartum depression of 1.08.

All case-control studies except for one (Pariente) reported higher incidence of postpartum depression since the pandemic commenced as compared to before. Pariente et al. reported the incidence of EPDS score of 10 or greater of 16.7% during pandemic as compared to 31.3% pre-pandemic. The discussion for potential explanation of such findings mentioned greater support for the postpartum women from family due to quarantine, partners working from home and earlier hospital discharge associated with less time for infection exposure at the hospital.

Several studies investigated the sociodemographic factors that potentially put a woman at higher risk of postpartum depression as compared to others. Some of these factors identified were lower educational level, lower household income, having greater financial concerns, perceived lack of social support or childcare, younger age, immigrant status, and loss of employment. One study found that parity was not a factor affecting the risk of postpartum depression (Lebel). On the other hand, “perceived support by healthcare provider and staff”, “quietness on the labor and delivery ward due to absence of hospital visitors” as well as a regular exercise routine were a few factors found to be protective against postpartum depression.

The literature search reviewed the available data on how the COVID-19 pandemic affects postpartum depression. It informed us of the gravity and widespread of the subject matter. Located in one of the hardest hit areas by the COVID-19 pandemic in the United States and serving a vulnerable patient population, we are motivated to contribute our findings on the effects of the pandemic on postpartum depression. We hope our studies will also contribute to the efforts to support postpartum women in tackling the psychological impact of this pandemic.

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