Revista Eletrônica
Acervo Saúde
Electronic Journal Collection Health ISSN 2178-2091

The COVID-19 pandemic and the increase in the prevalence/incidence of post-partum depression index

A pandemia da COVID-19 e o aumento do índice de prevalência/incidência de depressão pós-parto

La pandemia de COVID-19 y el aumento de la tasa de prevalencia/incidencia de la depresión posparto

Helena Garcia dos Santos[1], Aline Longoni[1], Djiovana Zanini[1], Isabela Thurow Lemes[1], Adriano Martimbianco de Assis[1].

ABSTRACT

Objective: This study evaluated the effect of the COVID-19 pandemic on the prevalence and/or incidence of postpartum depressive symptoms compared to the pre-pandemic period. **Methods:** An integrative review was conducted using four databases (PubMed, Scopus, Scielo, and LILACS), and the articles were organized using EndNote X7 software. Initially, 126 articles were found; after a detailed analysis, 30 studies were included in this review. **Results:** The main findings of this article are the fact that most publications represent studies with a cross-sectional design, using a single measurement scale, where the Edinburgh Postnatal Depression Scale (EPDS) was the most widely used assessment instrument, and China was the country where most research was conducted. Regarding the hypothesis of this study, it is possible to confirm it, since we observed that most studies showed an increase in the incidence and/or prevalence rates of Postpartum Depression (PPD) during the pandemic (87.5% of the studies that cited the change in the incidence and/or prevalence of PPD). **Final considerations:** We observed that most studies showed an increase in the incidence and/or prevalence rates of PPD during the pandemic.

Keywords: Postpartum depression, COVID-19, SARS-CoV-2, Prevalence, Incidence.

RESUMO

Objetivo: O presente estudo avaliou o efeito da pandemia da COVID-19 na prevalência e/ou incidência de sintomas depressivos pós-parto em relação ao período pré-pandêmico. **Métodos:** Foi realizada uma revisão integrativa utilizando quatro bases de dados (PubMed, Scopus, Scielo and LILACS), os artigos foram organizados através do software EndNote X7. Inicialmente foram encontrados 126 artigos, após uma análise detalhada restaram 30 estudos que foram incluídos para esta revisão. **Resultados:** Os principais achados deste artigo são o fato de que a maioria das publicações representam estudos com delineamento transversal, utilizando uma única escala de mensuração, onde a Escala de Depressão Pós-Parto de Edimburgo (EPDS) foi o instrumento de avaliação mais utilizado, e a China foi o país onde mais pesquisas foram realizadas. Quanto à hipótese deste estudo, é possível confirmá-la, pois observamos que a maioria dos estudos mostrou aumento nas taxas de incidência e/ou prevalência de Depressão Pós-Parto (DPP) durante a pandemia (87,5% dos estudos que citaram a modificação na incidência e/ou prevalência de DPP). **Considerações finais:** Observamos que a maioria dos estudos mostrou aumento nas taxas de incidência e/ou prevalência de DPP durante a pandemia.

Palavras-chave: Depressão pós-parto, COVID-19, SARS-CoV-2, Prevalência, Incidência.

[1] Catholic University of Pelotas (UCPEL), Pelotas - RS.

SUBMETIDO EM: 8/2024 | ACEITO EM: 9/2024 | PUBLICADO EM: 1/2025

RESUMEN

Objetivo: El presente estudio evaluó el efecto de la pandemia de COVID-19 sobre la prevalencia y/o incidencia de síntomas depresivos posparto en relación con el período prepandémico. **Métodos:** Se realizó una revisión integradora utilizando cuatro bases de datos (PubMed, Scopus, Scielo y LILACS), los artículos se organizaron mediante el software EndNote X7. Inicialmente se encontraron 126 artículos, luego de un análisis detallado quedaron 30 estudios que fueron incluidos para esta revisión. **Resultados:** Los principales hallazgos de este artículo son que la mayoría de las publicaciones representan estudios con un diseño transversal, utilizando una única escala de medición, donde la Escala de Depresión Postnatal de Edimburgo (EPDS) fue el instrumento de evaluación más utilizado y China fue el país. donde se realizó la mayor parte de la investigación. Respecto a la hipótesis de este estudio, es posible confirmarla, ya que observamos que la mayoría de los estudios mostraron un aumento en las tasas de incidencia y/o prevalencia de la Depresión Postparto (DPP) durante la pandemia (87,5% de los estudios que citaron la cambio en la incidencia y/o prevalencia de PPD). **Consideraciones finales:** Observamos que la mayoría de los estudios mostraron un aumento en las tasas de incidencia y/o prevalencia de PPD durante la pandemia.

Palabras clave: Depresión posparto, COVID-19, SARS-CoV-2, Prevalencia, Incidencia.

INTRODUCTION

COVID-19 infection is triggered by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is considered highly infectious. The outbreak began in the city of Wuhan, China in 2019 Lanes AK, et al. (2011), and quickly turned into a pandemic in early 2020, forcing affected countries to adopt strict measures such as social distancing and lockdowns to reduce the spread of the virus. In turn, attitudes like these were responsible for increasing the risk of the development of psychological disorders (CHRZAN-DĘTKOŚ L, et al., 2021).

Regarding mental health, the COVID-19 pandemic has greatly influenced the world population, with studies showing an increase in the prevalence of anxiety, stress, and depression (KONTOANGELOS K, et al., 2020). The groups most affected by the mental and psychological effects of this pandemic are people with pre-existing physical and mental problems, the elderly, victims of violence, people who suffer domestic abuse, people living in poverty, refugees, and hospitalized patients, people with chronic or immunosuppressed diseases, pregnant and postpartum women.

Postpartum depression (PPD) is a serious mental health problem that affects about 20 to 40% of women worldwide after childbirth O'Hara MW (2009), while epidemiological data estimate that 36 % of Brazilian postpartum women are affected, (LANES A, 2011). Motherhood is already a challenging period for women and they need to have a lot of knowledge and skills to undergo physical and psychological changes.

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), PPD is referred to as the diagnosis of major depression with onset in pregnancy or within 4 weeks after delivery (FIRST M, 2013). PPD is identified by sadness, sleep disturbances, loss of appetite, lack of interest in social events, and feelings of inadequacy when caring for the child. Among the various risk factors associated with PPD, we can mention insufficient economic and social support Rasmussen MH, et al. (2017), both directly affected by the pandemic. It is important to highlight that one in seven women develop PPD.

And women who suffer from “baby blues”, which is this feeling of sadness and crying after giving birth, tend to recover faster than others with PPD, which tends to last longer, delaying the resumption of normal functions. Recently, studies pointed to an increase in the prevalence of PPD in Chinese women who gave birth during the peak of the COVID-19 pandemic Sun G, et al. (2020), while similar results showed high levels of anxiety and a strong tendency towards mutilation. Elements that may be linked to the fear of virus infection.

Similarly, a study exploring breastfeeding practices during the pandemic identified that the lockdown had an impact on maternal experiences, resulting in distress for many women and impacting breastfeeding practices (DIB S, et al., 2020).

In this context, we carried out an integrative review to answer the following working hypothesis: i) during the COVID-19 pandemic, there was a higher prevalence and/or incidence of postpartum depressive symptoms than previously reported in the literature.

METHODS

Review question

Did the pandemic promote an increase in the prevalence and/or incidence rates of postpartum depression?

Inclusion and exclusion criteria

The inclusion criteria for selecting articles were studies investigating the relationship between COVID-19 and postpartum depression. Exclusion criteria were studies related to diseases other than postpartum depression, studies that did not assess the COVID-19 pandemic period, studies that were not performed with humans, and non-original studies such as an integrative review, pilot studies, studies with confounders, and letters to the editors. Language restriction was applied, excluding studies not written in English, Portuguese, or Spanish. Even after attempting to contact the authors, articles that were not fully available were also excluded.

Search strategy

This study was based on an integrative review of scientific articles published in indexed journals until the date of January 2024. The PubMed, Lilacs (Latin American and Caribbean Literature in Health Sciences) SciELO (Scientific Electronic Library Online), and Scopus databases were searched, according to (**Table 1**).

Table 1- Structured search strategy carried out in databases. The search followed the structure of each database.

Databases	MeSH term and entry terms
PubMed	(“Covid-19”)[MeSH Terms] OR (“SARS COV 2”)[MeSH Terms] AND (“Postpartum Depression”)[MeSH Terms] OR (“Perinatal Depression”)[MeSH Terms]
Web of Science	(“Covid-19”) OR (“SARS COV 2”) AND (“Postpartum Depression”) OR (“Perinatal Depression”)
Scielo	(“Covid-19”) OR (“SARS COV 2”) AND (“Postpartum Depression”) OR (“Perinatal Depression”)
Scopus	(“Covid-19”) OR (“SARS COV 2”) AND (“Postpartum Depression”) OR (“Perinatal Depression”)

Source: Santos HG, et al., 2024.

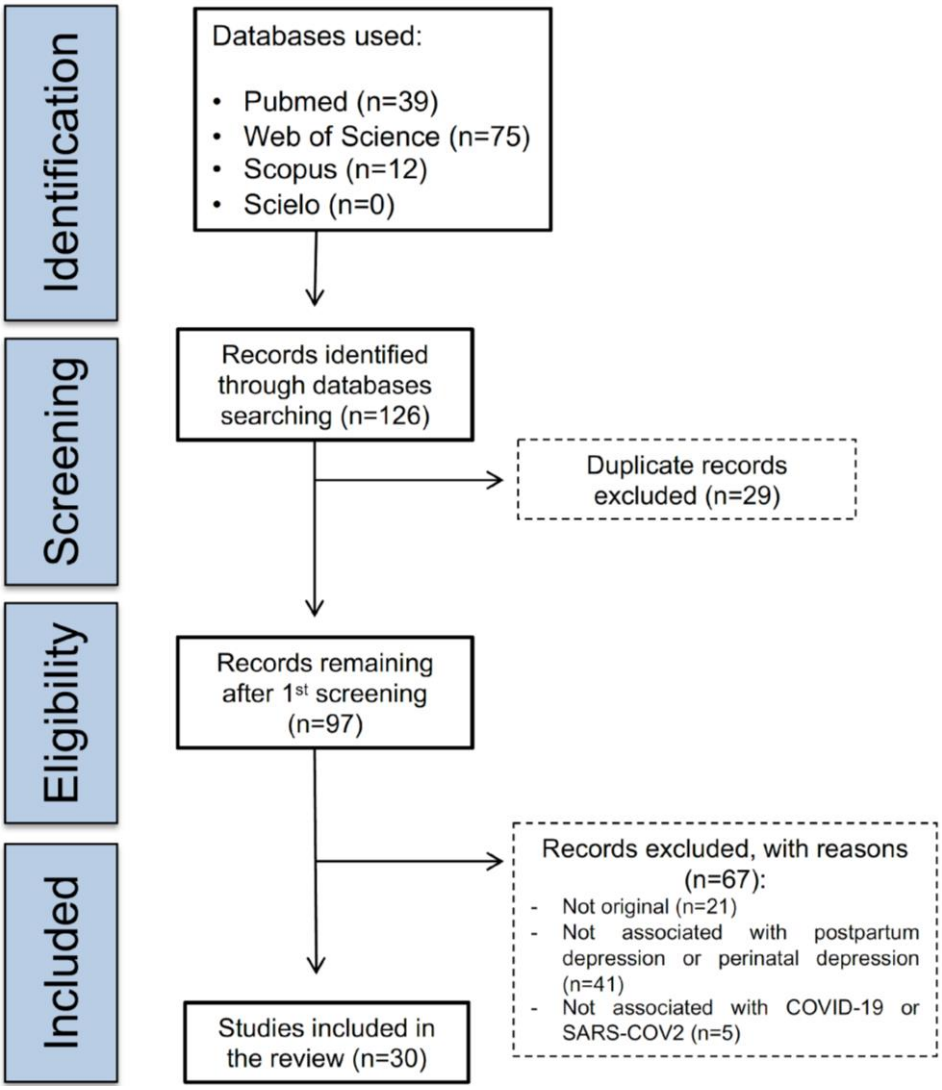
All references were managed in EndNote X7 software (Thomson Reuters, New York, NY, US). Initially, duplicate references were excluded. Titles and abstracts were independently screened based on two reviewers’ aforementioned inclusion and exclusion criteria (HGS and AMA).

The screened lists were compared, and in case of disagreement, a consensus was reached by discussion. When a consensus was not achieved, a third reviewer decided if the article should be included (AL).

After the initial screening of titles and abstracts, full articles were evaluated by the same two reviewers. In addition to an electronic search, the reviewers also performed a hand search in the reference lists of all included studies.

Predefined data collection worksheets were used for the data extraction of each selected publication. This integrative review followed the PRISMA statements, with some adjustments (**Figure 1**) (MOHER D, et al. 2009).

Figure 1- Flow chart analysis of the articles selected in the PubMed, Web of Science, Scopus, and Scielo databases (January 2024).



Source: Santos HG, et al., 2024.

Data extraction

The titles and abstracts of the studies were initially analyzed. For the full evaluation, publications with original results on COVID-19 and PPD in women/pregnant women were selected (**Figure 1**). A secondary search was also carried out in the bibliographic list of the articles initially evaluated to identify other important references not captured by the initial search.

In addition to extracting data on COVID-19 and PPD, information was collected on methodological aspects, such as location, types of study and pressure assessment instruments, which could influence the results of suspected or diagnosed cases of PPD, such as the design of the present study, outlining a sociodemographic profile of the population assessed and the country where the study was carried out (**Supplementary Table 2**).

The literature search process, such as extraction and tabulation of selected articles, was carried out independently by two reviewers (HGS and AMA) subsequently subjected to descriptive analysis. Cases of disagreement were handled as described above. Both reviewers also manually searched the reference section of each relevant article and independently assessed and collected all other articles identified as selected.

Statistical analysis

We chose not to meta-analyze data from eligible studies because there is heterogeneity in the postpartum periods analyzed.

RESULTS

The initial search yielded 126 articles; after removing 29 duplicate titles, a total of 97 articles were included for the title and abstract screening. After reading the full text, 67 studies were excluded. Of the 30 articles that satisfied the inclusion criteria (**Table 2**). **Figure 1** displays the PRISMA flowchart for the study selection process (MOHER D, et al., 2009).

Table 2- Summary of the thirty selected studies on COVID-19 and Postpartum Depression.

Author/Year	Main Findings
An R, et al. (2021)	Maternal postpartum depression in China was at a high level during the COVID-19 pandemic. Women aged 25–34, with a history of abortion and high stress levels were at higher risk for postpartum depression.
Bo HX, et al. (2021)	The COVID-19 pandemic was associated with an increased likelihood of mental health problems among pregnant and postnatal women. Over a quarter of the pregnant and postpartum women in China had depression during the COVID-19 pandemic.
Boekhorst MGBM, et al. (2021)	Our findings indicated that the COVID-19 pandemic induces worries in pregnant women in the Netherlands.
Brik M, et al. (2021)	A lockdown scenario during the first wave of the SARS-CoV-2 pandemic increased the symptoms of anxiety and depression among pregnant women, particularly affecting those with less social support.
Ceulemans M, et al. (2021)	This multinational study found high levels of depressive symptoms and generalized anxiety among pregnant and breastfeeding women during the COVID-19 outbreak.
Chrzan-Detkos M, et al. (2021)	The results of this study indicate that the epidemic crisis may be associated with an increased need for additional caution and support of women's mental health in the postpartum period.
Durankuş F and Aksu E (2020)	This study illustrated the effects of the COVID-19 pandemic on the depression and anxiety levels of pregnant women.
Fallon V, et al. (2021)	Prevalence rates of clinically relevant maternal depression and anxiety were extremely high when compared to both self-reported current diagnoses of depression and anxiety, and pre-pandemic prevalence studies.
Gluska H, et al. (2021)	As the use of PPE is crucial in this era of COVID-19 pandemic in order to protect both parturients and caregivers, creative measures should be taken in order to overcome the communication gap it poses.
Guvenc G, et al. (2021)	The COVID-19 pandemic has increased the incidence of depression in women in the postpartum period. It has been found that women's anxiety levels and their fear of COVID-19 infection have an impact on their depression experience.
Hiiragi K, et al. (2021)	There was no apparent increase in maternal psychological stress due to the COVID-19 pandemic in Yokohama, Japan.
Hui PW, et al. (2021)	Pregnant women reported more depressive symptoms in the postpartum period following the alert announcement regarding coronavirus infection in Hong Kong.
Lebel C, et al. (2020)	This study shows concerningly elevated symptoms of anxiety and depression among pregnant individuals during the COVID-19 pandemic, that may have long-term impacts on their children.

Liang P, et al. (2020)	The findings suggest the need for policies and interventions to not only mitigate the psychological impacts but also target disadvantaged sub-groups of women following childbirth during the COVID-19 pandemic.
Liu CH, et al. (2021)	Perinatal women with pre-existing mental health diagnoses show elevated symptoms during the COVID-19 pandemic. Although causation cannot be inferred, COVID-19- related health worries and grief experiences may increase the likelihood of mental health symptoms among those without pre-existing mental health concerns.
Marino-Narvaez C, et al. (2021)	Giving birth during the COVID-19 pandemic could have an impact on greater dissatisfaction with childbirth, as well as increasing the risk of postpartum depression.
Masters GA, et al. (2021)	The pandemic has increased symptoms of perinatal depression and anxiety and impacted perceived access to care.
McFarland MJ, et al. (2021)	These findings suggest that researchers and practitioners should pay special attention to signs of postpartum depression and women's adaptive coping responses in the early stages of pandemics.
Molgora S and Accordini M (2020)	These findings suggest the need for developing specific interventions targeted at women who cannot benefit from the support of their partners or family.
Myers S and Emmot EH (2021)	While Western childrearing norms focus on intensive parenting, and fathers are key caregivers, our results highlight that it still "takes a village" to raise children in high-income populations and mothers are struggling in its absence.
Obata, Miyagi, Haruyama et al. (2021)	Decreased support due to the COVID-19 pandemic affected the psychological status of pregnant and puerperal women; hence, investing medical resources in their healthcare essential.
Oskovi-Kaplan ZA, et al. (2021)	Evaluation of the factors that affect the psychological status of pregnant and postpartum women will lead the healthcare system to improve the implementations during the COVID-19 pandemic.
Ostacoli L, et al. (2020)	This study reports a high prevalence of postpartum depressive and PTSS in women who gave birth during the Covid-19 pandemic.
Pariente G, et al. (2020)	In conclusion, our study found that post-partum women delivering during the COVID-19 pandemic have lower risk for depression compared to the comparison group of women not delivering during the pandemic.
Peng S, et al. (2021)	Mothers with and without COVID-19 suffered a high incidence of depression, which warrants further mental health investment for pregnant mothers during the COVID-19 pandemic.
Puertas-Gonzalez JA, et al. (2021)	Women who gave birth during the COVID-19 crisis may show greater psychological vulnerability, due to the specific situation experienced during the pandemic.
Spinola O, et al. (2020)	Besides situational factors specific to the pandemic, the results show that there are some risk factors tied to the personal history of the mother (e.g., having had a previous abortion).
Suarez-Rico BV, et al. (2021)	The prevalence of depression, anxiety, and perceived stress among postpartum Mexican women during the COVID-19 pandemic lockdown were higher than what has been previously reported in the literature.
Zanardo V, et al. (2020)	Concerns about risk of exposure to COVID-19, combined with quarantine measures adopted during the COVID-19 pandemic, adversely affected the thoughts and emotions of new mothers, worsening depressive symptoms.
Zeng X, et al. (2020)	Increased attention should be paid to women who have infected friends/families/colleagues and those with previous adverse experiences during pregnancy.

Source: Santos HG, et al., 2024.

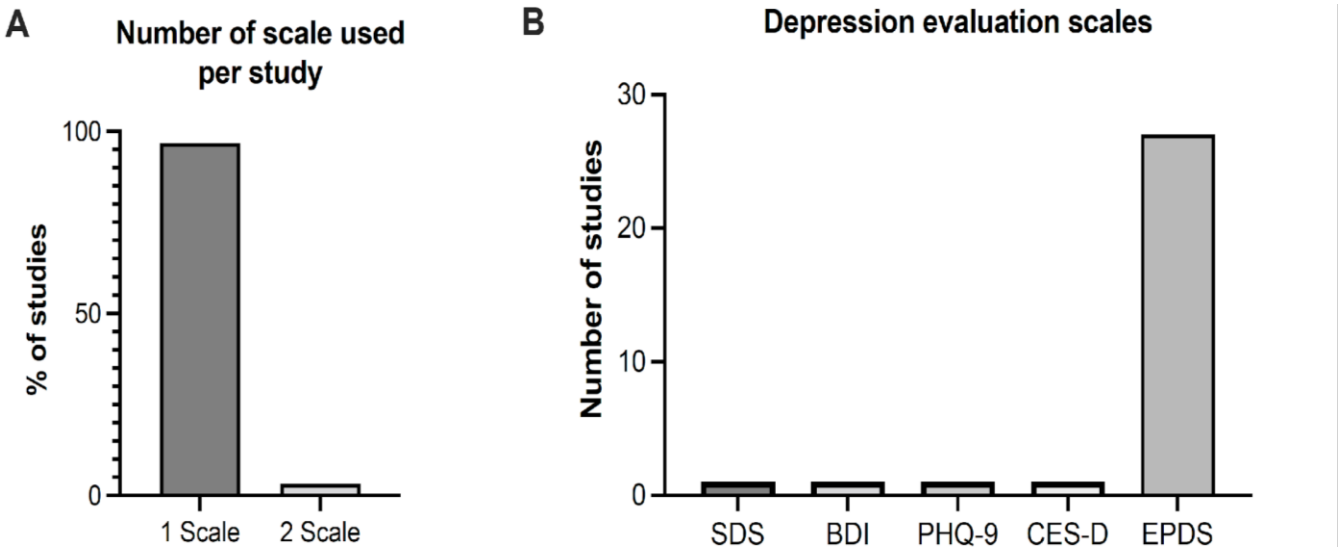
The main characteristics of the 30 articles that were part of this review revealed that among the different study designs, 21 of them were cross-sectional, representing 70% of the total. While there were 13.3% (4) cohort studies, 13.3% (4) were case-control and only 3.3% (1) were longitudinal multicenter studies (**Figure 2**).

In **Figure 2A**, we investigated the assessment instruments related to depression in the studies included in this review, in all, five different scales were used, with only one study using two instruments for this purpose, the others used only one instrument.

We can highlight that 27 of the articles used the Edinburgh Postnatal Depression Scale (EPDS), while the Zung Self-rating Depression Scale (SDS) was used by 1 article, The Beck Depression Inventory (BDI) was used by 1 article, Patient Health Questionnaire (PHQ)-9 was used by 1 article and Scale The Center for Epidemiologic Studies-Depression (CES-D) was also used by 1 of the selected articles. In addition to investigating which depression rating scales were used, we found that 96.6% (29) of studies used 1 rating scale, while only 3.3% (1) of the articles used 2 rating scales (**Figure 2B**).

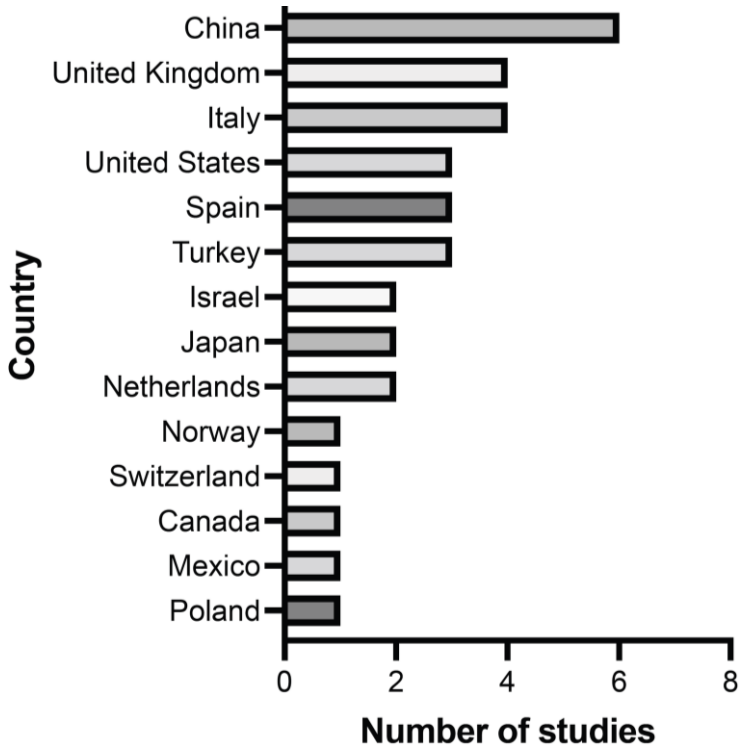
Regarding the countries where the studies were carried out, we observed different locations, and only one study took place in more than one country (Norway, Switzerland, the Netherlands, and the United Kingdom) Ceulemans M, et al. (2021), with the majority being of them carried out in China representing 6 of the studies, followed by the United Kingdom and Italy with 4 published studies each, the United States, Spain, and Turkey with 3 studies respectively, Israel and Japan with 2 studies each, followed by Poland, Canada, Mexico, and the Netherlands with 1 article each country representing the same number of publications (**Figure 3**).

Figure 2- Instruments to assess depression were used in the papers included in the integrative review. Number (A) and Names (B) of instruments.



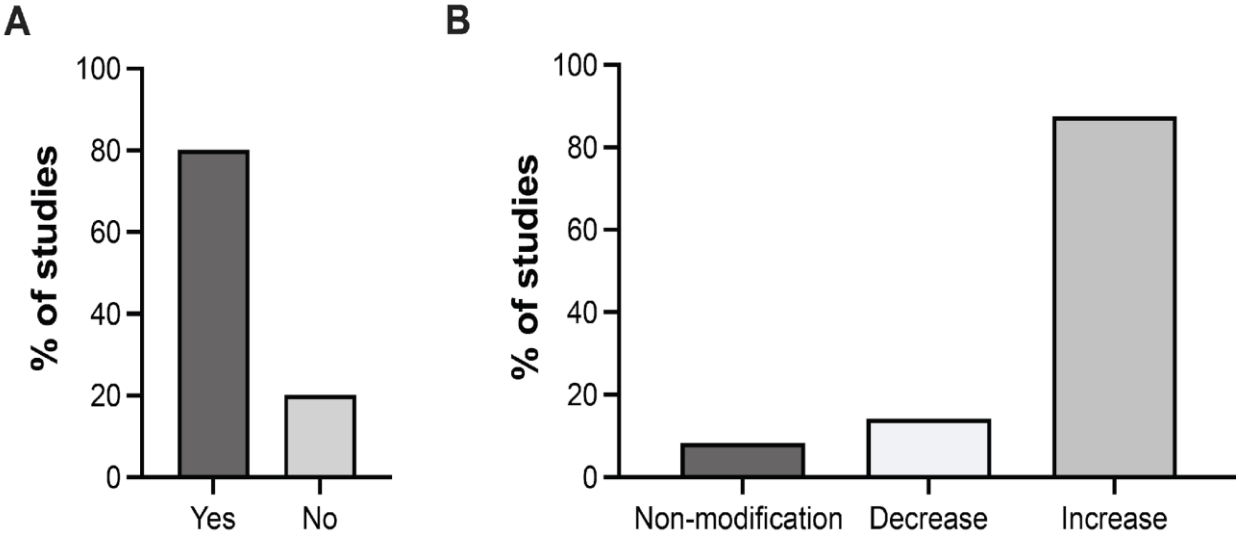
Source: Santos HG, et al., 2024.

Figure 3- Countries where the studies included in the integrative review were conducted.



Source: Santos HG, et al., 2024.

Figure 4- Percentage of studies that assessed the increase/decrease in the incidence/prevalence of PPD during the COVID-19 pandemic (A). Percentage of studies citing the increase, decrease, or non-modification of PPD incidence/prevalence during the COVID-19 pandemic (B).



Source: Santos HG, et al., 2024.

Regarding the results presented by the articles, a search was carried out to determine which of them answered the research question, which addresses whether the pandemic promoted an increase in the prevalence and/or incidence rates of postpartum depression (**Figure 4**). Among the studies included (**Figure 4A**), 20.0% (6) did not mention the aspect of prevalence and/or incidence of postpartum depression, while 80.0% (24) addressed the subject, and among them (**Figure 4B**), 87.5% (21) of the studies observed an increase in the rates, 4.16% (1) showed a decrease, and 8.33% (2) there was no change in the prevalence and/or incidence of depression post childbirth.

DISCUSSION

The COVID-19 pandemic, due to its sudden appearance and infectious characteristics, brought negative degrees on the mental health of the population, such as panic disorder, stress, anxiety, and depression. Therefore, it is extremely pertinent to carry out more investigations into the maternal psychological state. Investigating the prevalence of depression symptoms in women in the period after giving birth during the pandemic, reflecting a parameter on the mental and emotional state of these women, thus providing greater attention and support with appropriate professionals.

The main findings of the present study were the fact that most publications represent studies with a cross-sectional design, using a single measurement scale, where the Edinburgh Postnatal Depression Scale (EPDS) was the most used assessment instrument and China the place. In which more research was carried out. Regarding the hypothesis of this study, it is possible to confirm it, as we observed that most studies showed an increase in the incidence rates and/or prevalence of PPD during the pandemic, corroborating studies that demonstrate a prevalence of 27.43%, according to (BO, et al., 2021).

In our work, it can be observed that the majority of studies carried out had a cross-sectional design, which is defined by the epidemiological study in which factors and effects are observed at the same historical moment. It is believed that this research design was chosen because the pandemic began in 2020, therefore studies that take longer to occur, such as follow-up studies (longitudinal/cohort), have not yet been published.

The Edinburgh Postnatal Depression Scale (EPDS) was developed in Great Britain (Scotland) in 1987 (COX JL, et al., 1987). This instrument has been validated and adopted in several countries, Park SH and Kim JI (2022) in which it has a self-evaluative nature, in addition to being considered an instrument that is easy to apply and interpret.

Due to these factors, most studies use this instrument for diagnosis. Corroborating the literature, in our study we observed that the most used scale was the EPDS, appearing in 27 of the 30 studies included in this review (Figure 2B). It is noteworthy that the more scales used in a study, the more accurate the diagnosis and results can be, but 29 of the studies in this research used only one scale.

According to this research, it is possible to see that China carried out most of the studies on COVID-19, and given this, we believe that there are two hypotheses. One of them is that the virus was first detected in the Chinese city of Wuhan and, therefore, was the place where research began, and the other hypothesis is that China in 2020 led the production of world science. In addition to these factors, China is a developed country and has great incentives for public policies focused on science and technology.

In a study that mapped the scientific production of COVID-19 Zeng X, et al. (2020), mention that 2 of the 3 institutions and/or organizations that financed the most studies on the virus are located in China, firstly HUST - Huazhong University of Science and Technology financing 140 studies on the observed topic and in third place, Fudan University (Shanghai) financing 61 studies on the new coronavirus.

As the main question of this study, we sought to investigate whether the pandemic promoted an increase in the prevalence and/or incidence rates of postpartum depression. In response, most studies have shown an increase in rates. Corroborating our study, we can mention a survey carried out in Turkey, Durankuş F and Aksu E (2020) where 35.4% of participants obtained scores above 13 on the Edinburgh Postnatal Depression Scale (EPDS), and also another study carried out in the United Kingdom, where according to the authors, 274

women (43%) reported an EPDS score ≥13. Revalidating our findings, a meta-analysis revealed a prevalence of PPD of 34% in women during the pandemic period, significantly higher than in non-pandemic periods. Previously, the worldwide incidence of PPD was 10% by 2017 in developed countries and approximately 26% in developing countries.

We must always take into account the fear of infection of these mothers and infections of their babies and their families, significantly altering the EPDS scores. Because of this great fear of becoming infected, postpartum women requested to be discharged from the hospital as quickly as possible, avoided routine hospital exams during this period, and did not accept home visits during the postpartum period (SUAREZ-RICO BV, et al., 2021).

Due to this, the COVID-19 pandemic has had detrimental effects on the mental well-being of these women after childbirth (CEULEMANS M, et al., 2021). The social isolation associated with the pandemic adversely affected the mental health and psychological well-being of these mothers after giving birth, as well as maternity leave and home visits that were suspended and/or moved online.

These fears experienced during this period of the COVID-19 pandemic have had and will have major psychological consequences, increasing the risk of PPD and anxiety. This indicates that the pandemic is indeed a public health problem, which requires a change, that is, health re-education, thus alleviating the fear of these women, thus improving the mental well-being of this vulnerable population.

Consequently, the prevalence of PPD is 34% higher than incidents of anxiety. Ceulemans M, et al. (2021) identified that during disasters or events, rates of mental disorders are higher in women in the postpartum period than in the general population. Furthermore, approximately 30% of women with PPD take more than a year to recover from depression. However, COVID–19 does not seem to influence this time, therefore, more studies on this subject are needed.

Due to all these analyses, and with our findings on a serious public health problem, it is recommended that further research on this subject of PPD in isolation be carried out with strong professional support and continued health re-education for possible relief of these fears, thus improving the mental well-being of these women in this vulnerable postpartum period. PPD causes maternal and child consequences, and identifying risk factors can design intervention strategies to prevent impacts on the development of maternal and child well-being.

The greatest risks identified include sociodemographic and clinical factors, stress, anxiety, lack of support, and factors related to the pandemic, such as the mothers' professional situation (FALLON V, et al., 2021). Physical and mental conditions, such as physical or mental health problems, are also relevant (GUVENC G, et al., 2020). Limited access to health services during the pandemic contributed to increased psychological stress and anxiety. Women with less parental competence and insecurity are more prone to suffering, which can lead to stress and anxiety, impacting the well-being of babies and mothers (OSTACOLI L, et al., 2020).

It is widely recognized that informational, material, emotional, and evaluative support from health professionals and family members promotes women's ability to control depressive symptoms. However, during the pandemic, this support was limited due to restrictions to reduce the risk of COVID-19. The main point of our review is to standardize information using similar screening tools and cutoffs used postpartum.

However, our review had some limitations, such as the inclusion only of studies published in English, which may have excluded relevant studies. Furthermore, the studies were selected over a period, which may have resulted in the omission of eligible studies. It is important to highlight that our studies were predominantly cross-sectional, therefore, longitudinal studies are needed to understand the long-term effect of the pandemic on PPD. Therefore, further research into maternal well-being during the pandemic is recommended.

CONCLUSION

From the data obtained through this study, where we demonstrate an increase in the incidence and/or prevalence rates of PPD during the COVID-19 pandemic, it is possible to propose the implementation of programs and public policy strategies that offer social support during the period of pregnancy and postpartum, especially in exceptional circumstances such as the global pandemic situation, as they can cause increased stress and symptoms of depression, resulting in undesirable consequences for both mother and child.

FUNDING

This work was supported by Brazilian agencies and grants: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq 429570/2018-0) and INCT — Excitotoxicity, and Neuroprotection (465671/2014-4).

REFERENCES

1. AN R, et al. A survey of postpartum depression and health care needs among Chinese postpartum women during the pandemic of COVID-19. Arch Psychiatr Nurs, 2021; 35(2): 172-77.
2. BO HX, et al. Prevalence of Depressive Symptoms Among Pregnant and Postpartum Women in China During the COVID-19 Pandemic. Psychosom Med, 2021; 83(4): 345-50.
3. BOEKHORST MGBM, et al. The COVID-19 outbreak increases maternal stress during pregnancy, but not the risk for postpartum depression. Arch Womens Ment Health, 2021; 24(6): 1037-43.
4. BRIK M, et al. Psychological impact and social support in pregnant women during lockdown due to SARS-CoV2 pandemic: A cohort study. Acta Obstet Gynecol Scand, 2021; 100(6): 1026-33.
5. CEULEMANS M, et al. Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic- A multinational cross-sectional study. Acta Obstet Gynecol Scand, 2021; 100(7): 1219-29.
6. CHRZAN-DETKOS M, et al. The need for additional mental health support for women in the postpartum period in the times of epidemic crisis. BMC Pregnancy Childbirth, 2021; 21(1): 114.
7. COX JL, et al. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry, 1987; 150: 782-6.
8. DIB S, et al. Maternal mental health and coping during the COVID-19 lockdown in the UK: Data from the COVID-19 New Mum Study. International Journal of Gynecology & Obstetrics, 2020; 151(3): 407-14.
9. DURANKUŞ F, AKSU E. Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: a preliminary study. J Matern Fetal Neonatal Med, 2020: 1-7.
10. FALLON V, et al. Psychosocial experiences of postnatal women during the COVID-19 pandemic. A UK-wide study of prevalence rates and risk factors for clinically relevant depression and anxiety. J Psychiatr Res, 2021; 136: 157-66.
11. FIRST MB. Diagnostic and statistical manual of mental disorders, 5th edition, and clinical utility. J Nerv Ment Dis, 2013; 201(9): 727-9.
12. GLUSKA H, et al. The use of personal protective equipment as an independent factor for developing depressive and post-traumatic stress symptoms in the postpartum period. Eur Psychiatry, 2021; 64(1): 34.
13. GUVENC G, et al. Anxiety, depression, and knowledge level in postpartum women during the COVID-19 pandemic. Perspect Psychiatr Care, 2021; 57(3): 1449-58.
14. HIIRAGI K, et al. Psychological stress associated with the COVID-19 pandemic in postpartum women in Yokohama, Japan. J Obstet Gynaecol Res, 2021; 47(6): 2126-30.
15. HUI PW, et al. Effect of COVID-19 on delivery plans and postnatal depression scores of pregnant women. Hong Kong Med J, 2021; 27(2): 113-17.
16. KONTOANGELOS K, et al. Mental Health Effects of COVID-19 Pandemia: A Review of Clinical and Psychological Traits. Psychiatry Investig, 2020; 17(6): 491-505.
17. LANES AK, et al. Prevalence and characteristics of postpartum depression symptomatology among Canadian women: a cross-sectional study. Bmc Public Health, 2011; 11: 302.
18. LEBEL C, et al. Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic. J Affect Disord, 2020; 277: 5-13.
19. LIANG P, et al. Prevalence and factors associated with postpartum depression during the COVID-19 pandemic among women in Guangzhou, China: a cross-sectional study. BMC Psychiatry, 2020; 20(1): 557.
20. LIU CH, et al. Risk factors for depression, anxiety, and PTSD symptoms in perinatal women during the COVID-19 Pandemic. Psychiatry Res, 2021; 295: 113552.
21. MARINO-NARVAEZ C, et al. Giving birth during the COVID-19 pandemic: The impact on birth satisfaction and postpartum depression. Int J Gynaecol Obstet, 2021; 153(1): 83-88.

22. MASTERS GA, et al. Impact of the COVID-19 pandemic on mental health, access to care, and health disparities in the perinatal period. J Psychiatr Res, 2021; 137: 126-30.
23. MCFARLAND MJ, et al. Postpartum Depressive Symptoms during the Beginning of the COVID-19 Pandemic: An Examination of Population Birth Data from Central New Jersey. Matern Child Health J, 2021; 25(3): 353-59.
24. MOHER D, et al. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med, 2009; 6(7): 1000097.
25. MOLGORA S, ACCORDINI M. Motherhood in the Time of Coronavirus: The Impact of the Pandemic Emergency on Expectant and Postpartum Women's Psychological Well-Being. Front Psychol, 2020; 11: 567155.
26. MYERS S, EMMOTT EH. Communication Across Maternal Social Networks During England's First National Lockdown and Its Association With Postnatal Depressive Symptoms. Front Psychol, 2021; 12: 648002.
27. OBATA S, et al. Psychological stress among pregnant and puerperal women in Japan during the coronavirus disease 2019 pandemic. J Obstet Gynaecol Res, 2021; 47(9): 2990-3000.
28. O'HARA MW. Postpartum depression: what we know. J Clin Psychol, 2009; 65(12): 1258-69.
29. OSKOVI-KAPLAN ZA, et al. The Effect of COVID-19 Pandemic and Social Restrictions on Depression Rates and Maternal Attachment in Immediate Postpartum Women: a Preliminary Study. Psychiatr Q, 2021; 92(2): 675-82.
30. OSTACOLI L, et al. Psychosocial factors associated with postpartum psychological distress during the Covid-19 pandemic: a cross-sectional study. BMC Pregnancy Childbirth, 2020; 20(1): 703.
31. PARIENTE G, et al. Risk for probable post-partum depression among women during the COVID-19 pandemic. Arch Womens Ment Health, 2020; 23(6): 767-73.
32. PARK SH and KIM JI. Predictive validity of the Edinburgh postnatal depression scale and other tools for screening depression in pregnant and postpartum women: a systematic review and meta-analysis. Arch Gynecol Obstet, 2022.
33. PENG S, et al. A multi-center survey on the postpartum mental health of mothers and attachment to their neonates during COVID-19 in Hubei Province of China. Ann Transl Med, 2021; 9(5): 382.
34. PUERTAS-GONZALEZ JA, et al. Giving birth during a pandemic: From elation to psychopathology. Int J Gynaecol Obstet, 2021; 155(3): 466-74.
35. RASMUSSEN MH, et al. Risk, treatment duration, and recurrence risk of postpartum affective disorder in women with no prior psychiatric history: A population-based cohort study. PLoS Med, 2017; 14(9): 1002392.
36. SPINOLA O, et al. Effects of COVID-19 Epidemic Lockdown on Postpartum Depressive Symptoms in a Sample of Italian Mothers. Front Psychiatry, 2020; 11: 589916.
37. SUAREZ-RICO BV, et al. Prevalence of Depression, Anxiety, and Perceived Stress in Postpartum Mexican Women during the COVID-19 Lockdown. Int J Environ Res Public Health, 2021; 18: 9.
38. SUN G, et al. Perinatal Depression of Exposed Maternal Women in the COVID-19 Pandemic in Wuhan, China. Front Psychiatry, 2020; 11: 551812.
39. ZANARDO V, et al. Psychological impact of COVID-19 quarantine measures in northeastern Italy on mothers in the immediate postpartum period. Int J Gynaecol Obstet, 2020; 150(2): 184-88.
40. ZENG X, et al. Mental Health Outcomes in Perinatal Women During the Remission Phase of COVID-19 in China. Front Psychiatry, 2020; 11: 571876.