





RESEARCH BRIEF

Trends in postpartum mental health care before and during COVID-19

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Abstract

Objective: To assess the impact of COVID-19 on trends in postpartum mental health diagnoses and utilization of psychotherapy and prescription drug treatment.

Data Sources: Data were obtained from a large, national health insurance claims database that tracks individuals longitudinally.

Study Design: We used interrupted time series models to examine changes in trends of postpartum mental health diagnoses before and during the COVID-19 pandemic and t-tests to examine differences in treatment.

Data Extraction Methods: We used billing codes to identify individuals who received mental health-related diagnoses and treatment in the first 90 days after a birth hospitalization. We excluded individuals diagnosed with schizophrenia or bipolar disorder and those with an unknown payer at delivery.

Principal Findings: Compared to the pre-pandemic period, the trend in new postpartum mental health diagnoses increased significantly in the post-COVID-19 period (0.06 percentage points [95%CI 0.01, 0.11]). Over 12 months, the percentage of new diagnoses was 5.0% greater relative to what would be expected in absence of COVID-19. The percentage of diagnosed individuals who did not receive treatment increased from 50.4% to 52.7% ($p = 0.003$).

Conclusions: Findings point to an urgent need to improve screening and treatment pathways for perinatal individuals in the wake of COVID-19.

KEYWORDS

COVID-19, COVID-19 research database, interrupted time series, Medicaid, mental health, perinatal depression

What is known on this topic

- The COVID-19 pandemic increased stress, depression, and anxiety among perinatal individuals.
- Previous studies have found high rates of foregone mental health care following the onset of the pandemic in the general population.

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- Little is known about the utilization of mental health care during the COVID-19 pandemic among pregnant and postpartum individuals.

What this study adds

- This study assessed the utilization of mental health care before and during the pandemic among postpartum individuals.
- We found that the trend in postpartum mental health diagnoses increased significantly in the post-COVID-19 period. We found increases in the percentage of diagnosed individuals who did not access treatment.
- This study provides important evidence that the pandemic further exacerbated existing challenges for postpartum individuals, with larger treatment gaps for the Medicaid insured.

1 | INTRODUCTION

Postpartum depression and anxiety affect 11%–22% of pregnant and postpartum individuals, with higher rates among those who are non-White, younger, and with lower education.^{1,2} Untreated postpartum mental health conditions can lead to adverse health and social outcomes for both mother and child.^{3–6} Systematic reviews have found that the COVID-19 pandemic and associated economic downturn increased stress, depression, and anxiety among perinatal individuals through a variety of channels, including fear of the virus, social isolation, inadequate childcare, and financial instability.^{7,8} Studies have found high rates of foregone mental health care following the onset of the pandemic in the general population, with slow and incomplete rebound rates, particularly among Medicaid beneficiaries.⁹ However, little is known about the utilization of mental health care during the COVID-19 pandemic among pregnant and postpartum individuals.

In this study, we assessed the impact of COVID-19 on postpartum mental health care utilization, including the rates of diagnoses and utilization of psychotherapy and prescription drug treatment using a large, national health insurance claims database.

2 | METHODS

2.1 | Data and study sample

We conducted a retrospective observational analysis using health insurance claims data from Symphony Health, a claims clearinghouse that covers an estimated 16,000 health plans, 1500 hospitals, 280 million patients, 1.9 million practitioners, and 93% of prescriptions dispensed in the U.S.¹⁰ Data were provided by the *COVID-19 Research Database*. The data include patients tracked longitudinally even if they switched insurers or pharmacies, as long as the practitioner or pharmacy is covered by the clearinghouse. Data included diagnosis, procedure, and prescription drug codes. The data extract included all claims between May 01, 2019 and June 30, 2021.

We identified individuals who gave birth using childbirth ICD-10 codes (Appendix A1). Consistent with prior research, individuals were required to meet one of the following requirements on the date of

delivery: (1) two unique delivery-related diagnosis codes, (2) two unique delivery-related procedure codes, or (3) one delivery-related diagnosis and one delivery-related procedure code.¹¹ Dates with two or more delivery-related diagnosis and/or procedure codes within 100 days of each other were grouped together and the date with the greatest number of diagnosis and/or procedure codes was flagged as the date of delivery. When an individual had more than one birth episode during the study period (3% of births), we randomly chose one birth to maintain the independence of observations. We excluded individuals diagnosed with schizophrenia or bipolar disorder because of different treatment requirements for these mental illnesses (2%).¹² Finally, we excluded individuals whose birth was financed by an unknown payer (7%). To observe a 90-day postpartum period for all individuals, we restricted our analytic sample to individuals who gave birth before March 31, 2021.

2.2 | Outcomes

Following previous literature, we used billing codes to identify individuals' mental health-related diagnoses (depression, anxiety, or stress-reaction), outpatient treatment (psychotherapy), and pharmaceuticals (antidepressants, anxiolytics).^{12,13} Appendix A2 includes details on the codes used. For pharmaceuticals, we restricted the data to pharmacies that reported claims every month to the database throughout the data extract period (96% of all pharmacy claims), in order to maintain a consistent sample of pharmacies in the database. We calculated the percentage of individuals giving birth in a particular month who received a mental health diagnosis in the first 90 days postpartum, beginning on the day of the birth hospitalization. In order to separate new cases of depression or anxiety from ongoing illness, we separately examined all diagnoses and "new diagnoses," which we defined as diagnoses among individuals who did not have a claim for a mental health diagnosis or treatment in the last 90 days of their pregnancy (prior to the delivery hospitalization).⁹

2.3 | Analyses

We defined the pre-COVID period as deliveries from May to December 2019 for all diagnoses and deliveries from August to

December 2019 for new diagnoses to allow for 90 days of prenatal data for all individuals. The post-COVID period was defined as deliveries that occurred after the start of the COVID pandemic, that is, April 2020 to March 2021. Deliveries from January to March 2020 were excluded from analyses because the 90-day postpartum period for individuals giving birth in those periods was partially affected by COVID-19.

First, we used segmented linear regression interrupted time series models with Newey-West standard errors to examine changes in the trend of postpartum mental health diagnoses between pre-COVID and post-COVID periods. The model included level and trend parameters at two change points (January 2020 and April 2020). Model specification details are provided in Appendix A3. We estimated separate models for all diagnoses and for new diagnoses. As level changes were not apparent, we present only changes in trends in the main results. Full results are shown in Appendix A3. Finally, we conducted t-tests to examine differences in treatment use among those with a diagnosis (no treatment, prescription drug treatment, and psychotherapy treatment) in the pre-COVID compared to the post-COVID period.

Analyses were conducted overall for the full sample and stratified by type of payer at delivery. In sensitivity analyses, we examined results without excluding the partially treated months from the analysis, beginning the post-COVID period from January 2020. Data were analyzed using Stata version 16.

3 | RESULTS

There were 2,088,981 individuals who gave birth during the study period, with 637,907 (30.5%) who were insured by Medicaid and 1,451,074 (69.5%) who were insured by commercial insurance. The average age at birth was 27 years for Medicaid-insured births compared to 30 years for the commercially insured (Appendix A4). The rate of preterm births was 12.3% among Medicaid-insured compared to 8.9% among commercially insured individuals, while the cesarean section rate was similar (40.7 vs. 39.8%). While the average age at birth and preterm birth rates were very similar to the average in U.S. natality data, the rates of cesarean section in our data were higher (Appendix A4).

Figure 1 shows trends in new postpartum mental health diagnoses during the pre- and post-COVID periods. In December 2019, 6.1% of individuals received a new mental health diagnosis code in the first 90 days postpartum. There was a marked reduction in diagnoses for individuals who gave birth during the initial months of COVID-19 (February and March 2020), likely the result of interrupted service delivery in the initial course of the pandemic.⁹ In the pre-COVID period, there was a slowly increasing trend in new postpartum mental health diagnoses. The trend in new postpartum mental health diagnoses post-COVID significantly increased relative to the pre-COVID period (difference in slope pre- and post-COVID, 0.06 percentage points [95%CI, 0.01, 0.11]) (Table 1). Appendix A3 shows the full regression output showing both level and trend estimates. Over the

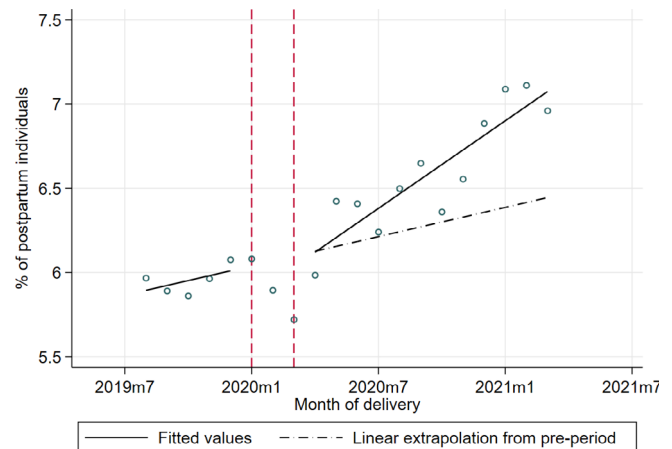


FIGURE 1 Percentage of postpartum individuals who received a new mental health diagnosis in the first 90 days postpartum, May 2019–March 2021. Figure shows for each month, the percentage of individuals who gave birth in that month who received a new diagnosis for anxiety, depression, or stress-reaction in the first 90 days of their postpartum period, beginning on the day of delivery hospitalization. Vertical dashed lines indicate the months during which an individual who gave birth would have part of her 90-day postpartum period before COVID and part of it during COVID (January 2020–March 2020) and are omitted from in analysis. Linear trend lines are plotted, with slopes calculated before the pandemic (May 2019–December 2019) and during the pandemic (April 2020–March 2021). Black dot-dash lines show the linear extrapolation of the pre-period trend. [Color figure can be viewed at wileyonlinelibrary.com]

12-month period from April 2020 to March 2021, the percentage of new diagnoses was 5.0% greater relative to what would be expected in the absence of COVID-19. Appendix A5 shows these trends stratified by the payer at delivery. There was a statistically significant 0.08 pp (95%CI, 0.02, 0.13) increase in the trend for new diagnoses for the commercially insured; the change among the Medicaid insured was not statistically significant (0.02 pp [95%CI, -0.05, 0.08]).

The difference in slope between pre-COVID and post-COVID periods was slightly smaller for all diagnoses, with similar patterns for commercially versus Medicaid insured. Changes in trends in postpartum diagnoses were not sensitive to including January–March 2020 as part of the post-COVID-19 period (Appendix A6). Similar patterns were observed for depression and anxiety diagnoses, while there was no change in stress-reaction diagnoses (Appendix A7).

Figure 2 shows the percentage of individuals with diagnoses who also received a claim for prescription drug treatment, psychotherapy treatment, or no treatment in the pre- and post-COVID-19 periods. In the Medicaid group, 54.0% received neither a prescription drug nor psychotherapy treatment in the pre-COVID period. This treatment gap increased to 57.1% in the post-COVID period ($p = 0.001$) (Appendix A8). For commercially insured, the percentage with no treatment increased from 48.5% to 50.4% ($p = 0.007$). The decrease in treatment was driven by a decrease in the percentage of individuals who received prescription drug treatment (39.7% to 35.7%

TABLE 1 Change in percentage of postpartum individuals with mental health diagnoses in first 90 days postpartum, overall, and by payer at delivery, May 2019–March 2021

	% of individuals with diagnosis in Dec 2019	Pre-COVID slope in trend, pp (CI)	Post-COVID slope in trend, pp (CI)	Difference in slope between pre-COVID and post-COVID periods, pp (CI)
New diagnoses				
Full sample	6.1	0.03 (−0.02, 0.07)	0.09 (0.06, 0.11)	0.06 (0.01, 0.11)
Medicaid	6.8	0.06 (0.01, 0.10)	0.07 (0.02, 0.12)	0.02 (−0.05, 0.08)
Commercial	5.7	0.01 (−0.03, 0.06)	0.09 (0.07, 0.11)	0.08 (0.02, 0.13)
All diagnoses				
Full sample	9.0	0.07 (0.05, 0.10)	0.13 (0.10, 0.15)	0.05 (0.02, 0.09)
Medicaid	10.2	0.06 (0.01, 0.12)	0.11 (0.06, 0.15)	0.04 (−0.03, 0.11)
Commercial	8.5	0.07 (0.05, 0.10)	0.13 (0.11, 0.15)	0.06 (0.02, 0.09)

Note: Results from interrupted time series model adjusting for autocorrelation. The outcome is the percentage of birthing individuals who received a diagnosis of anxiety, depression, or stress-reaction in the first 90 days of their postpartum period, beginning on the day of delivery hospitalization. New diagnoses refer to new diagnoses during the postpartum period. Pre-COVID period for new diagnoses is August 2019–December 2019, while for all diagnoses it is May 2019–December 2019. Post-COVID period is April 2020–March 2021. Medicaid category includes individuals with any claim paid for by Medicaid during hospitalization for childbirth.

Abbreviation: pp, percentage point.

Source: Authors' analysis of data from Symphony Health claims, May 2019–March 2021.

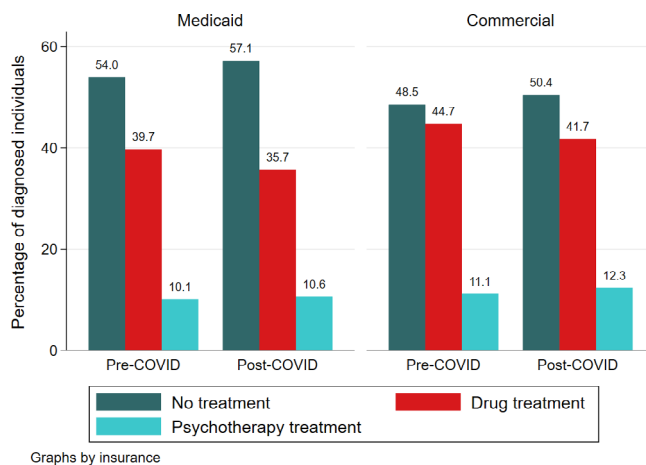


FIGURE 2 Treatment received within the first 90 days postpartum among individuals with mental health diagnoses, during the pre- and post-COVID periods, by payer at delivery. Data includes all diagnoses in the postpartum period. Figure shows the percentage of individuals with a claim for a postpartum mental health diagnosis who also had a claim for drug treatment, psychotherapy treatment, or no treatment in the first 90 days postpartum. Percentages do not add to 100 because some individuals had both drug and psychotherapy treatment claims. Standard errors and *p*-values for differences between pre- and post-COVID periods are shown in Appendix A8. [Color figure can be viewed at wileyonlinelibrary.com]

[$p < 0.001$] among Medicaid insured and 44.7% to 41.7% [$p < 0.001$] among commercially insured). There was a small but significant increase in the percentage of individuals with psychotherapy treatment among the commercially insured (11.1% to 12.3%, $p < 0.001$), an increase of 11 percent over the pre-pandemic level. The increase was smaller for the Medicaid insured (10.1% to 10.6%, $p = 0.09$).

4 | DISCUSSION

We found that the COVID-19 pandemic was associated with increases in diagnoses of postpartum mental health conditions, a finding consistent with systematic reviews indicating worsening perinatal mental health as a result of the pandemic.⁸ Commercially-insured postpartum individuals experienced larger increases than those who were Medicaid-insured. This finding may be counterintuitive considering that other studies found that low-income pregnant women (e.g., those who qualify for Medicaid) experienced more pandemic-related stressors, including financial, social, health and health care, and childcare.^{7,14} The finding may reflect that commercially-insured individuals were more likely to be diagnosed than their Medicaid-insured peers, regardless of underlying depression prevalence. Compared to commercial insurance, Medicaid offers more limited coverage of mental health services and beneficiaries may have experienced difficulty finding clinicians who accept Medicaid payment rates.⁴ Expanded access to telehealth during the pandemic for Medicaid beneficiaries may have been hampered by lower digital literacy and unreliable Internet services.⁴

Half of all diagnosed postpartum individuals received no prescription drug or psychotherapy treatment in the pre-COVID period, underscoring the barriers to meeting perinatal mental health needs even before the pandemic began.¹⁵ We found an increase in these treatment gaps, resulting from decreases in the provision of prescription drugs, which is consistent with recent evidence on the pandemic's disruption of mental health care.⁹ These decreases may be the result of low demand (e.g., if treatment was unaffordable, particularly for those already financially strapped),⁷ insufficient supply (e.g., if services were unavailable, particularly in the early stage of the pandemic),⁹ or a combination of both. Use of psychotherapy increased slightly for people with commercial insurance. The change may have been the result of increased access to telehealth services;

unfortunately, we were not able to discern telehealth from in-person diagnoses in our data.⁴

The analysis had several limitations. We examine mental health during the first 90 days postpartum. While the vast majority of postpartum depression diagnoses occur in this period, we miss diagnoses that occur later.¹³ The data is available only from May 2019, providing a short pre-pandemic period and limiting our ability to adjust our models for seasonality. We also could not examine trends by race, education, or other factors predictive of perinatal mental health. Administrative claims data have limitations, including lack of population representativeness, undercoding of mental health conditions, and inability to observe screening patterns or forms of treatment such as peer support groups that may have seen changes in use over the pandemic. Finally, many perinatal mental health conditions are neither diagnosed nor treated; as this study relies on claims data, it cannot provide an assessment of the change in the prevalence of mental health conditions during the pandemic.⁴

4.1 | Implications for policy and practice

We found that the trend in postpartum mental health diagnoses increased significantly in the post-COVID period compared to 2019. We also found increases in the percentage of diagnosed individuals who did not access treatment. These findings emphasize the importance of improving screening and treatment pathways for perinatal individuals in the wake of the COVID-19 pandemic. Possible policy solutions may include extending Medicaid to 12 months of postpartum coverage, ensuring coordination of services for mothers and infants through co-located facilities, expanding insurance coverage of community-based maternal care, and increasing access to psychiatric telehealth services.^{4,16}

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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