

Claims-Based Comparison of Characteristics and Healthcare Costs Between Mothers with and without Postpartum Depression

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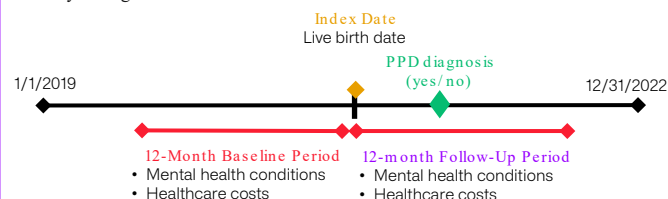
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Study Summary

Study Question: What are the demographic and clinical characteristics of mothers with and without postpartum depression (PPD) and the healthcare costs attributable to PPD?

Study Design



Study Results

- Mothers with PPD experienced higher rates of mental health comorbidities during the pre- and post-natal periods than mothers without PPD.
- Costs attributable to PPD were estimated to be \$1,424 in the first year after birth.

Conclusion: Pre-birth mental health comorbidities appeared to persist in the post-natal period and likely contribute to higher healthcare costs both pre- and post-delivery, highlighting the need for mental health screening and care throughout the perinatal period.

Background

- Between 10% to 20% of women experience postpartum depression (PPD) after giving birth. However, nearly half of them are not diagnosed.¹
- Historically, it has been difficult to capture PPD from administrative claims data; however, a specific diagnosis code for PPD became available in 2019.

Objective

- To compare demographics, clinical characteristics, and healthcare costs between mothers with and without PPD within one year following a live birth using an administrative claims database.

Methods

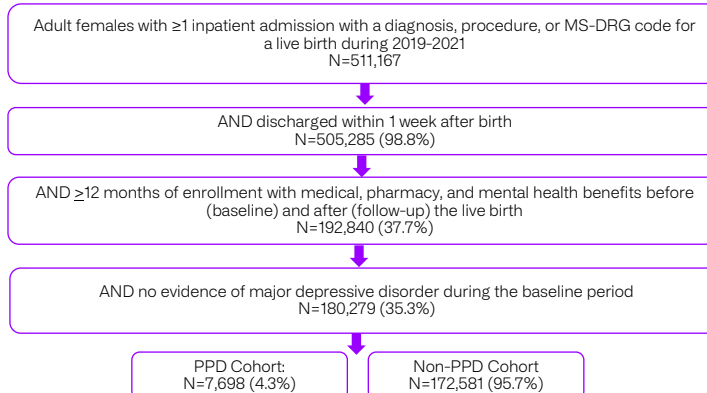
Data Source

- Fully adjudicated medical claims from 2019 - 2022 in the Merative™ MarketScan® Commercial Database, which includes medical claims for healthcare services performed in inpatient and outpatient settings along with outpatient pharmacy claims and enrollment data

Study Sample

- Figure 1 presents the study selection criteria. Qualified patients were classified into two cohorts based on evidence of PPD during 1-year following discharge from an inpatient admission with evidence of a live birth:
 - PPD cohort: ≥1 non-diagnostic claim with a PPD diagnosis during follow-up
 - Non-PPD cohort: no non-diagnostic claims with a PPD diagnosis during follow-up

Figure 1. Patient Selection



Methods, Cont.

Outcomes

- Charlson Comorbidity Index (CCI) and mental health-related comorbidities (Table 2) were assessed during baseline and follow-up.
- All-cause healthcare costs were assessed during baseline and follow-up. Comparisons were made between mothers with and without PPD using t-tests and chi-square tests. Difference-in-difference analysis estimated costs attributable to PPD.
 - Healthcare costs were based on paid amounts of adjudicated claims, including insurer and health plan payments as well as patient cost-sharing in the form of copayment, deductible, and coinsurance.

Results

- A total of 180,279 mothers qualified, with 4.3% (7,698) having PPD within one year after live birth (Figure 1).
- Mean age was 30.6 for mothers with PPD and 31.4 for those without PPD (Table 1).

Table 1. Demographic Characteristics on the Index Date

Demographic Characteristics	PPD N=7,698		Non-PPD N=172,581		p-value
Age (Mean, SD)	30.6	5.4	31.4	5.2	<0.001
Geographic region (N, %)					
Northeast	796	10.3%	23,507	13.6%	<0.001
North Central	2,034	26.4%	39,401	22.8%	
South	3,210	41.7%	80,542	46.7%	
West	1,623	21.1%	28,101	16.3%	
Unknown	35	0.5%	1,030	0.6%	
Insurance plan type (N, %)					
CDHP/HDHP	1,883	24.5%	46,591	27.0%	<0.001
Comprehensive/indemnity	216	2.8%	3,729	2.2%	
EPO/PPO	3,602	46.8%	77,569	44.9%	
HMO	1,441	18.7%	28,820	16.7%	
POS with or without capitation	492	6.4%	14,046	8.1%	
Other/unknown	64	0.8%	1,826	1.1%	

EPO/PPO: exclusive provider organization/preferred provider organization; POS: point-of-service; HMO: health maintenance organization; CHDP/HDHP: consumer-driven health plan/high-deductible health plan; PPD: postpartum depression; SD: standard deviation

Results, Cont.

- Mothers with PPD had higher baseline rates of several mental health-related conditions, including anxiety disorders (PPD: 13.6% vs. non-PPD: 7.5%), non-migraine headache (8.8% vs. 5.5%), severe stress reactions/adjustment disorders (6.5% vs. 3.3%), migraine (5.9% vs. 3.3%), and fatigue (4.9% vs. 3.5%) (all p<0.001; Table 2).
- 24% of mothers with PPD had a follow-up major depressive disorder diagnosis, compared to 4.1% of mothers without PPD.
- Mothers with PPD experienced large increases in the rates of anxiety disorders (13.6% to 41.4%), severe stress reactions/adjustment disorders (6.5% to 16.5%), and sleep disorders (2.9% to 7.0%) from baseline to follow-up, while mothers without PPD experienced modest increases in these conditions during the same period (Table 2).

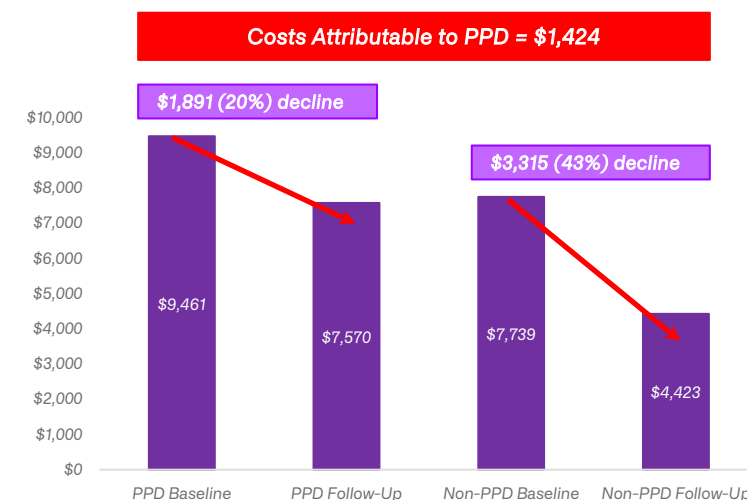
Table 2. Clinical Characteristics, Baseline and Follow-Up Periods

Clinical Characteristics	Baseline Period			Follow-up Period		
	PPD	Non-PPD	p-value	PPD	Non-PPD	p-value
Number of patients	7,698	172,581	-	7,698	172,581	-
CCI (Mean, SD)	0.14 (0.44)	0.10 (0.37)	<0.001	0.16 (0.50)	0.10 (0.42)	<0.001
Comorbid conditions (%)						
Anxiety disorders	13.6%	7.5%	<0.001	41.4%	11.8%	<0.001
Headache (non-migraine)	8.8%	5.5%	<0.001	6.5%	3.7%	<0.001
Reaction to severe stress & adjustment disorders	6.5%	3.3%	<0.001	16.5%	4.7%	<0.001
Migraine	5.9%	3.3%	<0.001	6.8%	3.4%	<0.001
Fatigue	4.9%	3.5%	<0.001	9.9%	5.2%	<0.001
Mental disorders complicating pregnancy	3.9%	1.9%	<0.001	0.5%	0.1%	<0.001
Sleep disorders	2.9%	1.6%	<0.001	7.0%	2.0%	<0.001
ADHD	2.1%	1.4%	<0.001	3.1%	1.8%	<0.001
Substance abuse	1.8%	1.2%	<0.001	1.6%	0.5%	<0.001
Bipolar disorder	0.9%	0.4%	<0.001	1.8%	0.4%	<0.001
Persistent mood disorders	0.7%	0.3%	<0.001	1.3%	0.4%	<0.001
OCD	0.3%	0.2%	0.146	1.2%	0.3%	<0.001
Phobic anxiety disorders	0.3%	0.2%	0.107	0.7%	0.2%	<0.001
Eating disorders	0.2%	0.1%	0.388	0.4%	0.1%	<0.001
Personality disorders	0.1%	0.0%	0.135	0.4%	0.1%	<0.001
Suicide attempt/ideation	0.1%	0.0%	0.139	1.6%	0.1%	<0.001
MDD	0.0%	0.0%	0.974	24.0%	4.1%	<0.001

ADHD: attention deficit hyperactivity disorder; CCI: Charlson Comorbidity Index; MDD: major depressive disorder; OCD: obsessive compulsive disorder; PPD: postpartum depression; SD: standard deviation

- Mothers with PPD had \$1,722 greater baseline costs than mothers without PPD (\$9,461 vs. \$7,739; p<0.001), and \$3,147 greater costs during follow-up (\$7,570 vs. \$4,423; p<0.001) (Figure 2).
- Total costs decreased 42.8% (\$3,315) between baseline and follow-up among mothers without PPD, compared to a 20.0% (\$1,891) decrease among mothers with PPD (Figure 2).
- Difference-in-difference analysis estimated \$1,424 of follow-up costs among mothers with PPD to be attributable to PPD (Figure 2).

Figure 2. Healthcare Costs Attributable to PPD



PPD: postpartum depression.

Limitations

- Identification of PPD was based on diagnoses recorded on healthcare claims, which are subject to coding limitation and data entry errors.
- Healthcare costs may be underestimated because services covered by capitation were included and not adjusted for their \$0 costs.
- Only PPD patients with employer-sponsored commercial insurance coverage were included; the results may not be generalizable to mothers with other types of insurance (e.g., Medicaid) or those who are uninsured.

Conclusions

- Mothers with PPD have baseline mental health diagnoses and other comorbidities that may predispose them to depression after giving birth.
- These pre-natal comorbidities appear to persist in the post-natal period and likely contribute to higher healthcare costs both pre- and post-delivery.
- These observations highlight the need for mental health screening and care throughout the perinatal period.

References

- Langton, K. Postpartum Depression Statistics. <https://www.postpartumdepression.org/resources/statistics/>.
- Epperson et al. Healthcare resource utilization and costs associated with postpartum depression among commercially insured households. *Curr Med Res Opin.* 2020 Oct;36(10):1707-1716.

Disclosure

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