

Postpartum Depression Is Associated With Higher Levels of Household Total Healthcare Costs

Households of mothers affected by postpartum depression (PPD) face significantly higher average healthcare costs in the first year following childbirth than the households of mothers unaffected by PPD,¹ according to researchers from the Department of Psychiatry, University of Colorado School of Medicine, Sage Therapeutics, Inc., and Analysis Group in a recently completed study entitled **“Healthcare Resource Utilization and Costs Associated with Postpartum Depression Among Commercially Insured Households.”**

In the United States, estimates of new mothers experiencing symptoms of PPD vary by state from 8% to 20%, with an overall average of 11.5%.² PPD is distinct from “baby blues” due to the timing, severity, and duration of symptoms.³⁻⁹ Baby blues symptoms typically peak at 5 days postdelivery and resolve within 10 days.¹⁰ Baby blues symptoms include frequent crying, worrying, irritability, fatigue, sadness, and mood swings.^{5,7} Expert opinions on the onset of PPD symptoms vary. Symptoms of PPD may persist throughout the first postnatal year.¹¹⁻¹³ Symptoms of PPD include trouble bonding with and ability to care for the baby; thoughts of self-harm or harm to the baby; experiencing anger or rage; and withdrawal from friends and family.⁸ The cause of PPD is still unknown; however, it is thought that a combination of factors may play a role, including hormonal fluctuations.^{14,15} In addition, other risk factors include sleep disturbances,¹⁶ history of depression,^{17,18} history of trauma,¹⁹ chronic stress,²⁰ and low socioeconomic status.²¹

PPD can cause a strain during what may be already a stressful time, not only psychologically but financially as well. There is currently limited information on the economic impact that PPD has on households both immediately postpartum and over the subsequent years when consequences are likely to accrue more broadly.²² In the present study, the researchers sought to quantify the economic burden of PPD on households in the first year postpartum, using individual-level administrative claims.¹

STUDY DESIGN

Data were obtained from medical and pharmacy insurance, as well as short- and long-term disability claims made between January 2009 through March 2016 from the OptumHealth Care Solutions database. Patients included in the study must have given birth between January 2010 through September 2014, maintained health plan enrollment for 12 months before and 18 months after childbirth, and have no evidence of bipolar disorder, schizophrenia, schizoaffective disorder, psychosis, other psychosis, or a filling of an antipsychotic drug prescription before childbirth. The target study population (7906 women, of which 7769 were matched) must have been diagnosed with or treated for depression within 12 months after childbirth and were identified via an algorithm based on a combination of ICD-9-CM diagnosis codes, national drug codes (NDC), and procedural

codes associated with depression and other mood disorders. The PPD date is the date of the first PPD-related insurance claim.¹

The PPD qualifying diagnoses and treatment combinations included:

- A. ≥ 1 inpatient stay or ≥ 1 ED visit, depression/mood, or adjustment disorder diagnosis **OR**
- B. ≥ 2 outpatient visits (depression or mood or adjustment disorder) on different claims **OR**
- C. (1 outpatient visit with a diagnosis code for depression or mood or adjustment disorder) AND (a second, distinct claim with a procedure code for transcranial magnetic stimulation [TMS] or electroconvulsive therapy [ECT] or psychotherapy) **OR**
- D. (1 outpatient visit with a diagnosis code for depression or mood or adjustment disorder) AND (a second distinct outpatient visit with a diagnostic code for anxiety) **OR**
- E. (1 claim with a procedure code for TMS or ECT) AND (a second, distinct outpatient visit with a diagnostic code for anxiety) **OR**
- F. A prescription for an SSRI or SNRI preceded by 1 outpatient visit with a diagnostic code for depression or mood or adjustment disorder or anxiety

Medical spending was juxtaposed between mothers diagnosed with PPD in relation to a matched control group. The control group (n=65,105) included all women who met the continuous enrollment criteria, but were not diagnosed with or treated for depression, anxiety, or adjustment disorders in the year prior to childbirth. Matching was based on a variety of individual-level (age of mother, baseline health of mother, method of delivery, preterm delivery indicator) and household-level (insurance enrollment type, region, family size and household composition, non-mental health spending, and availability of work-loss data) characteristics. A propensity score-matching algorithm was used to compare each woman in the PPD cohort to her closest match from the set of potential controls resulting in 41,308 matched controls identified. This algorithm assumed that any difference in outcomes was attributed to the identification of PPD.

Researchers investigated both the total healthcare spending and the spending directly related to PPD. The total healthcare spending, both for households affected by and those non-affected by PPD, was calculated based on total all-cause medical and pharmaceutical costs paid by the insurer. The difference-in-mean estimates were compared between the subject and control groups for direct total all-cause healthcare costs and underlying covariates over a 6-month cost evaluation period. The assumption was made that the 6-month interval postpartum for the control group corresponded to the 6-month cost assessment period for the subject group postdiagnosis.¹

INCREASE IN TOTAL ALL-CAUSE SPENDING

The results indicated that households affected by PPD experienced 22% higher levels of all-cause medical and pharmaceutical insurer spending (\$36,049 versus \$29,448, $P < 0.01$) than their matched controls in the first year after delivery. Direct PPD-related spending accounted for approximately 21% of this difference. Part of the cost difference among households affected by PPD was related to the increased number of all-cause outpatient visits in the PPD cohort compared to the control cohort (57 versus 41, $P < 0.01$).¹

Within evaluated households, mothers comprised the largest share (>50%) of total all-cause spending. The mothers affected by PPD incurred 27% more total all-cause medical and pharmaceutical insurer spending, when compared to their matched cohort (\$19,611 versus \$15,410, $P < 0.01$), at 1 year after delivery. About one-third of the difference in total all-cause spending was related to PPD.¹

The total cost for the partners in the households was also analyzed and demonstrated significant differences in average total all-cause medical and pharmaceutical insurer spending and inpatient and outpatient visits during the first year following childbirth. With a significant difference between the groups (\$3483 versus \$2663, $P<0.01$), the partner of a mother diagnosed with PPD incurred approximately 30% more costs than a partner of a mother non-affected by PPD. Differences in costs incurred by having a newborn, as well as other dependent children, were also investigated. The researchers reported no statistically significant difference in average total all-cause medical and pharmaceutical costs comparing infants in households affected by PPD to their matched controls (\$10,662 versus \$9461, $P=0.16$) or comparing other dependent children in households affected by PPD to their matched controls (\$2243 versus \$1889, $P=0.10$).¹

Healthcare resource utilization differed in terms of both outpatient visits and number of inpatient days. PPD-affected households averaged more outpatient visits than their matched cohorts, with an average of 57 and 41 visits, respectively ($P<0.01$). Individually, mothers affected by PPD had 11 more outpatient visits during the year postpartum than their matched cohorts. Moreover, a significant difference was observed between the number of inpatient stays between PPD-affected mothers and the mothers in the control cohort, with a one-day average increase in the number of admissions for the subject group (7 versus 6 days, $P<0.01$).¹

PPD AFFECTS ENTIRE HOUSEHOLD

The findings of the study suggest that PPD may place a financial burden on the healthcare system due to its affecting both the individual and other members of the household. The researchers wrote that this is a “unique contribution,” considering that “healthcare costs attributed to PPD have not been previously studied in a comprehensive manner, especially those that might be attributed to the partner and other dependent children in the household.”¹

After observable differences in demographics and health characteristics between the groups were controlled for, the data suggested PPD was associated with higher average levels of healthcare spending for the mother and the partner. Insurers of PPD-affected mothers and households exhibited increases of 22% in total all-cause costs (both physical- and mental health-related costs) and direct PPD-related costs. Indirect causes of costs attributed to PPD were evident in the form of healthcare resource utilization. This use was most prominently measured in terms of number of outpatient visits, which the authors wrote reflect “potential increased productivity costs in work days lost.”¹ Furthermore, the increased outpatient visits were seen both with respect to the households and mothers affected by PPD.¹

“The increased healthcare costs following the identification of PPD is in part due to increased utilization in the form of treatment for the individual,” the researchers wrote. Specifically, the PPD-affected mothers used more prescription painkillers in the year following delivery than their matched controls.¹

Although mothers accounted for more than half of the total all-cause spending, the researchers wrote that the “findings in this study suggest that the economic burden as measured by direct healthcare costs associated with PPD extends beyond mothers,” with “higher average levels of health spending for the mother and the partner.” Ultimately, the largest share of the cost to the household was incurred by the insurer.¹

SUCCESS IN QUANTIFYING BURDEN, SOME LIMITATIONS

The analysis relies on accurate reporting of diagnoses and costs, particularly reliable ICD-9-CM diagnosis codes, which the authors noted as a potential limitation. “To the extent that inaccurate reporting of psychiatric conditions by physicians is reflected on the claims, there may be some contamination in the control cohort,” they wrote.¹

The database only included claims from large self-insured employers and did not allow analysis for uninsured women or women on public insurance. The algorithm used to identify affected women in the database did not perfectly identify all women affected by PPD, with potential misclassification of PPD patients as part of the control group. Women with preexisting depression, anxiety, or mood disorders were excluded from the control cohort,

which means the differences in spending associated with PPD may also include the spending associated with preexisting psychiatric conditions in the PPD cohort only. Overall, the study did not permit an analysis based on the severity of PPD and restricted study participants to family members who were covered by the same insurance plan as the mothers.¹

Despite the potential limitations, this research successfully quantified the household level healthcare costs associated with the member suffering from PPD, and also successfully linked higher-than-average levels of healthcare spending for both the mothers and partners to a diagnosis of PPD.¹

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