

Sleep and Mood During Pregnancy and the Postpartum Period



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KEYWORDS

• Pregnancy • Postpartum • Perinatal • Mood • Sleep • Depression • Anxiety

KEY POINTS

- Based on self-report and objective assessments, sleep is disrupted during pregnancy and the postpartum period.
- There is strong evidence that poor self-reported sleep quality is associated with poor mood and might be a risk factor for mood problems during the perinatal period.
- The relationship between objectively assessed sleep and mood is weaker and less consistent than the relationship between subjective sleep and mood.
- Nonpharmacologic intervention studies have shown promise in improving maternal sleep and mood.

PERINATAL MOOD DISTURBANCES

Despite commonly held beliefs of joy and happiness, women are vulnerable to mood disturbances during the perinatal period. Postpartum blues, or baby blues, is a transient form of moodiness experienced by up to 85% of new mothers 3 to 4 days after delivery, which usually dissipates within a week.¹ A smaller but notable percentage of new mothers experience a major depressive disorder during pregnancy (up to 20%) or the postpartum period (about 12%–16%).² Although postpartum blues is generally considered a normal event that does not impair functioning, perinatal depression is a psychiatric condition that requires clinical attention.

The exact causes of postpartum blues and perinatal depression are under ongoing research. Serum levels of many circulating hormones (eg, estrogen, progesterone, prolactin, thyroid hormones) increase gradually over the course of pregnancy and then decrease precipitously within days of delivery,³ followed by a slower retreat from extravascular compartments.⁴ These changes

coincide with the occurrence of perinatal mood disturbances, but neither single nor combined biochemical factors have been identified as direct contributors. Several psychosocial factors have been shown to increase the risk for perinatal mood disturbances, including antenatal anxiety and depressive symptoms, the presence of psychiatric history, marital conflict, lack of social support, and stressful life events.⁵

Sleep disturbance has only recently been studied as a possible contributing factor to perinatal mood disturbances. This article describes the effect of the perinatal period on the sleep of mothers and reviews the literature relating disrupted sleep and perinatal mood disturbances.

SLEEP DURING PREGNANCY AND THE POSTPARTUM PERIOD

Methods of Sleep Measurement

In this literature, sleep has been assessed by a variety of methods, each with advantages and disadvantages. Subjective measurements of sleep

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include self-report questionnaires, rating scales, and sleep diaries and are the most widely used methods in childbearing women. Subjective methods are nonintrusive and easy to administer. They reflect women's overall perception rather than an accurate assessment of actual sleep.

Objective sleep assessment typically involves polysomnography (PSG) and/or actigraphy. PSG is an electrophysiological study of sleep that collects physiologic information and plots them against time. Although typically conducted in a sleep laboratory, in a perinatal population, PSG is more commonly used in an ambulatory form in a woman's own home. Although PSG gives detailed assessments of sleep duration and quality, as well as sleep architecture, it is compromised by a relatively higher cost as well as involving an unnatural sleeping environment as a result of equipment discomfort. An actigraph is a watchlike device that estimates sleep duration and quality based on wrist movement. It is capable of continuous measurement of sleep over multiple days or even weeks in participants' natural environment with minimum intrusion.

Studies have shown differences between self-report, PSG, and actigraphy-measured sleep parameters. For example, self-reported sleep duration has been found to be longer than that measured by actigraphy⁶ and PSG⁷ during the second and third trimesters, whereas self-reported sleep-onset latency (SOL) was found to be longer than that measured by PSG in both pregnant and nonpregnant women.⁷

Sleep Characteristics During the Perinatal Period

Sleep and wake patterns are significantly challenged during the perinatal period. New mothers are exposed to possible chronic sleep disruption and fragmentation during pregnancy, acute sleep deprivation during labor and immediate postpartum periods, as well as chronic partial sleep deprivation and disruption during the first few months after giving birth to the newborn.

Subjective sleep

In cross-sectional studies, pregnant women have self-reported poorer sleep than nonpregnant controls.⁸ Longitudinal studies provide insight into specific changes in sleep over the perinatal period. For example, in a study of 325 pregnant women with sleep measured by self-report, there was an increase in nighttime awakenings and a decrease in sleep efficiency (SE) beginning in the first trimester and continuing throughout pregnancy. Perceived total sleep time (TST) increased during the first trimester and then slightly

decreased during the second trimester, followed by a substantial decrease during late pregnancy.⁹ This finding suggests that women perceive their sleep to be disrupted from as early as the first trimester despite an increase in sleep duration. Sleep tends to gradually improve during the postpartum period. In a small study ($N = 7$), sleep diaries kept continuously from 5 to 12 weeks post partum showed a progressive decrease in wake after sleep onset.¹⁰ The same study also noted that from 9 to 12 weeks post partum, women's sleep patterns were associated with their reports of infant sleep-wake patterns and feeding practices.

Objective sleep

Cross-sectional PSG studies have revealed significant differences in sleep architecture in pregnant women compared with nonpregnant controls. One of the earliest studies¹¹ compared PSG measures of 7 women in the last month of pregnancy with 9 age-matched nonpregnant controls and found that the pregnant group had longer SOL, more nighttime awakenings, less TST, and less slow wave sleep (SWS). A similar study¹² compared 12 women in the third trimester to 10 nonpregnant controls and found that pregnant women had lower SE largely caused by nighttime awakenings, more stage 1 sleep, and a lower percentage of rapid-eye-movement (REM) sleep; however, no group differences in TST or SWS were found. Longitudinal PSG studies are rare. Lee and colleagues¹³ obtained ambulatory PSG-measured sleep in 31 women before pregnancy, at each trimester, and at 1 and 3 months post partum. The TST was the lowest at 1 month post partum, averaging 6.2 hours, followed by the third trimester and prepregnancy baseline, and was the highest during the first trimester, averaging 7.4 hours. SE decreased progressively across pregnancy, from 93% before pregnancy to 81% at 1 month post partum. There was no significant difference in REM sleep over time, but SWS progressively decreased throughout pregnancy. A general improving trend in all aspects of sleep was observed at 3 months post partum, although neither sleep quality nor quantity returned to prepregnancy levels.

Studies using actigraphy have confirmed the PSG finding that nighttime sleep deteriorates progressively throughout pregnancy, particularly during the last weeks of gestation, being the poorest on the night before delivery.^{14,15} A recent actigraphy study¹⁶ of the weeks immediately before and after delivery reported that, although nighttime sleep was significantly disrupted after giving birth, napping significantly increased, resulting in the

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