



Sleeping for Two: The Great Paradox of Sleep in Pregnancy

Commentary on Ebert et al. Minimal effect of daytime napping behavior on nocturnal sleep in pregnant women. *J Clin Sleep Med* 2015;11:635–643 and Okun et al. Identifying insomnia in early pregnancy: validation of the insomnia symptoms questionnaire (ISQ) in pregnant women. *J Clin Sleep Med* 2015;11:645–654.

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Pregnancy is a very special and joyous time in a woman's life, but it is also a time of serious sleep disturbances. Most epidemiologic studies suggest there is an increased need for sleep during pregnancy. The high levels of human chorionic gonadotropin and progesterone that are required to maintain pregnancy are also soporific and thermogenic, promoting daytime sleepiness and early sleep onset.¹ Meanwhile, there is growing evidence linking sleep disturbances with adverse pregnancy outcomes.^{2–4} The message is clear: good sleep is important for a healthy pregnancy.

Herein lies the great paradox of sleep in pregnancy—despite the seemingly imperative need for healthy sleep and our body's attempt to promote it, many of the normal physiologic and psychological changes accompanying pregnancy make restful sleep all but impossible. For example, it is very common for pregnant women to experience nausea, heartburn, nocturia, and back pain, all of which may interfere with sleep. Progesterone, while promoting daytime sleepiness, also causes nocturnal sleep fragmentation. Oxytocin, the hormone responsible for uterine contractions, peaks at night and may cause sleep fragmentation in late pregnancy. Moreover, pregnancy increases the risk for sleep disorders such as restless leg syndrome, snoring and obstructive sleep apnea (OSA). Preexisting conditions such as asthma may be exacerbated by pregnancy-related physiologic changes such as upper airway congestion, heartburn, and immunologic changes.⁵ Finally, pregnancy can be psychologically stressful, and the expectant mother may lie awake during the night worrying about labor, the baby's health, or any number of things. In fact, the National Sleep Foundation's 1998 *Women and Sleep* poll found that 78% of women reported more disturbed sleep during pregnancy than at any other times of their lives.⁶

Sleep disturbances during pregnancy have been associated with a multitude of negative maternal and fetal outcomes. Sleeping less than 6 hours during the last month of pregnancy has been associated with longer labor and greater risk for Cesarean deliveries.^{7,8} Likewise, sleep deprivation during pregnancy has been associated with increased serum levels of inflammatory biomarkers such as interleukin-6.⁹ Snoring is reported in up to 35% of pregnant women,¹⁰ and is associated with greater than two-fold increase in adjusted odds for

preeclampsia, gestational diabetes, and unplanned Cesarean deliveries.² Recent data from a large pregnancy cohort showed that having OSA increases the risk of low birth weight, preterm birth, Cesarean section and preeclampsia.¹¹

The two articles by Ebert et al.¹² and Okun et al.¹³ in this issue of *Journal of Clinical Sleep Medicine* (JCSM) address the need to scientifically unravel this sleeping in pregnancy paradox. The authors performed secondary analysis on data available from pregnant women who were part of a prospective observational study evaluating the impact of sleep disturbances on perinatal outcomes. Okun et al. evaluated the usefulness of the Insomnia Sleep Questionnaire (ISQ), and concluded the simple 13-item self-report instrument was a useful tool to screen for insomnia in early pregnancy. The ISQ identified insomnia in nearly 13% of pregnant women at 12 weeks gestation who had not previously been known to have insomnia. The ISQ scores were compared to the Pittsburgh Sleep Quality Index (PSQI), wrist actigraphy, and sleep diaries, and the ISQ was found to have high specificity but variable sensitivities. This was primarily due to substantial variability in the comparison measures in their ability to identify insomnia. As the authors acknowledge, their study was limited by the lack of a gold standard, such as a clinical interview, to validate the ISQ for pregnant women. Ideally, a good screening test for insomnia would have high sensitivity, since the consequences of missing the condition may be severe and the confirmatory test following a positive screen (i.e., clinical interview) is a low-risk process. Also noted by the authors, the ISQ does not necessarily differentiate insomnia due to a medical condition or a sleep disorder. A positive screen necessitates further evaluation for a potential underlying condition. This study emphasizes the need to find an easy, cost-effective, and valid means of routinely screening for not only insomnia during pregnancy, but other sleep disorders as well.

In the article by Ebert et al.,¹² the role of nap frequency and nap duration on quality and quantity of nocturnal sleep was evaluated. The authors report that frequent daytime naps (> 4 naps/2 weeks), regardless of duration, did not significantly impact nighttime sleep quality or quantity. Their findings suggest that daytime naps may be compensatory for poor nocturnal sleep, and that napping may be a useful strategy to deal with

chronic sleep disturbances during pregnancy. This study used the same dataset as Okun's study above,¹³ and was therefore similarly limited by poor agreement between self-reported and actigraphy-measured sleep variables. Regardless, the study emphasizes that in addition to being able to better identify sleep disturbance, there is a need to find therapeutic options to improve sleep during pregnancy.

Although studies have demonstrated no increased risk of congenital abnormalities from the use of hypnotics, and sleep medications may be effective and lead to good postpartum maternal outcomes,^{14,15} the fear of harm to the fetus understandably continues to dissuade many of us from going directly to pharmacologic treatments for pregnancy related sleep disturbances. Therefore, we continue to search for answers to overcome the great paradox of sleep in pregnancy, and to determine if these interventions will in fact lead to improved maternal and fetal outcomes. The two studies^{12,13} in this issue of JCSM are very important in this regard—they underscore the fact that chronic disrupted sleep during pregnancy should never be accepted as “normal.” They urge us to systematically evaluate pregnant women for sleep issues, and support the classic notion that pregnancy is in fact a time when one should strive to sleep for two.

CITATION

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DISCLOSURE STATEMENT

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