



Sleep Quality During Pregnancy and Its Relationship With Postpartum Depression and Anxiety: A Family Medicine Perspective

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Abstract

Background: Sleep disturbance is frequent during pregnancy and often persists after childbirth. Poor sleep overlaps clinically and biologically with perinatal depression and anxiety, yet sleep symptoms may be normalized as an unavoidable feature of pregnancy and remain untreated.

Aim: To synthesize evidence on pregnancy-related sleep change, its association with postpartum depression and anxiety, and practical opportunities for prevention and early intervention in family medicine.

Methods: A targeted narrative review of PubMed/MEDLINE-indexed systematic reviews, meta-analyses, prospective cohorts, randomized trials, and major perinatal mental-health guidance was conducted through August 2026. Evidence on sleep physiology, insomnia, sleep-disordered breathing, restless legs syndrome, mental-health outcomes, screening, and nonpharmacological treatment was prioritized.

Results: Sleep quality commonly worsens across gestation through interacting hormonal, anatomical, psychological, and social mechanisms. Observational syntheses consistently associate antenatal insomnia and poor sleep quality with higher perinatal depressive symptoms and postpartum depression; emerging prospective evidence also links poor antenatal sleep with postpartum anxiety. The relationship is probably bidirectional and is modified by previous psychiatric illness, socioeconomic adversity, pain, obesity, obstetric complications, and infant-related sleep disruption. Cognitive behavioral therapy for insomnia improves prenatal insomnia, and recent trials indicate benefits extending into the postpartum period, although prevention of postpartum depression or anxiety remains less certain.

Conclusion: Sleep assessment should be integrated into antenatal and postpartum care as a modifiable clinical domain, not treated as a minor discomfort. Family physicians can combine brief sleep and mental-health screening, identification of specific sleep disorders, stepped behavioral treatment, safety assessment, and coordinated referral.

Keywords: pregnancy; sleep quality; insomnia; postpartum depression; postpartum anxiety; family medicine



Introduction

Sleep is a multidimensional biological function defined by adequate duration, continuity, timing, regularity, and restorative value. Pregnancy challenges each of these dimensions. Hormonal change, nocturia, gastroesophageal reflux, pain, fetal movement, altered breathing, and anticipatory worry can fragment sleep even when time in bed appears sufficient. Consequently, a pregnant woman may report profound fatigue and impaired daytime function despite apparently acceptable sleep duration.^{1,2,3,4}

Perinatal depression and anxiety are among the most consequential complications of pregnancy and the first postpartum year. They affect maternal functioning, bonding, breastfeeding, family relationships, health-service use, and child development. Their presentation is easily obscured because disturbed sleep, low energy, reduced concentration, and appetite change also occur in uncomplicated pregnancy and early parenthood. Current guidance therefore favors repeated, validated screening linked to a defined pathway for assessment, treatment, follow-up, and urgent response when self-harm, psychosis, mania, or inability to care for the infant is suspected.^{5,6,7}

Sleep is clinically important because it is both a symptom and a plausible contributor to perinatal emotional disorder. Meta-analytic and longitudinal evidence consistently connects antenatal insomnia or poor sleep quality with depressive symptoms during pregnancy and after birth, while prospective data increasingly implicate sleep in postpartum anxiety trajectories. The association is not automatically causal: depression and anxiety also worsen sleep, and both share social, obstetric, metabolic, and behavioral determinants. A family-medicine approach is valuable because it can address these interacting domains across preconception, antenatal, and postpartum continuity of care.^{8,9,10}

Aim

To critically review changes in sleep across pregnancy, the evidence linking antenatal sleep quality with postpartum depression and anxiety, and an integrated screening and management framework suitable for family medicine practice.

Review Approach

This targeted narrative review prioritized systematic reviews, meta-analyses, prospective cohorts, randomized controlled trials, and authoritative perinatal mental-health guidance indexed through August 2026. Evidence was organized around clinical questions relevant to primary care: how sleep changes during pregnancy, which disorders should not be missed, how sleep relates to postpartum depression and anxiety, which tools are practical, and which interventions have credible benefit. Because definitions, instruments, sampling times, and adjustment strategies vary markedly, effect estimates were interpreted according to study design rather than pooled uncritically.^{3,8,9}

Sleep Across Pregnancy: Expected Change and Clinical Disorder

Sleep architecture changes from early gestation onward. Rising progesterone can increase sleep propensity, while nausea, urinary frequency, breast tenderness, and emotional adjustment interrupt sleep. Later pregnancy brings mechanical restriction, back and pelvic pain, reflux, dyspnea, fetal movement, and difficulty finding a comfortable position. Objective studies show that the dominant pattern is not a simple linear loss of sleep but a redistribution of sleep, with greater fragmentation and reduced efficiency becoming increasingly prominent as pregnancy advances.^{4,11,12,13}

Pregnancy also modifies circadian regulation. Placental and maternal hormonal rhythms transmit time-related signals to the fetus, while irregular work schedules, evening light exposure, reduced daytime activity, and social obligations can destabilize maternal sleep timing. Shift work and socioeconomic constraint may therefore matter independently of total sleep duration. This broader concept of sleep health is clinically preferable to asking only how many hours a woman sleeps.^{2,13,14}

Physiological change should not be used to dismiss clinical insomnia. Insomnia disorder is characterized by persistent difficulty initiating or maintaining sleep, or waking earlier than intended, together with meaningful daytime impairment despite adequate opportunity for sleep. Pregnancy may also uncover or aggravate restless legs syndrome, obstructive sleep apnea, parasomnias, or circadian disorders. Medication, caffeine, nicotine, pain, thyroid disease, anemia or iron deficiency, reflux, and psychiatric symptoms may contribute and require separate evaluation.^{15,16,17,18}

Epidemiology and Determinants of Poor Sleep

Prevalence estimates depend heavily on the instrument and gestational timing. The widely cited meta-analysis of Pittsburgh Sleep Quality Index studies found that poor sleep quality affects a large proportion of pregnant women and becomes more frequent later in gestation. Insomnia-symptom estimates are likewise heterogeneous because some studies measure a single complaint, whereas others require frequency, chronicity, daytime impairment, and adequate sleep opportunity. These distinctions prevent a universal prevalence figure from being clinically meaningful.^{3,18}



Determinants accumulate rather than operate in isolation. Previous depression or anxiety, high perceived stress, intimate-partner conflict, low income, crowded housing, limited social support, unplanned pregnancy, pain, obesity, multiparity, and demanding work or caregiving roles can all reduce sleep opportunity or increase nocturnal arousal. Race and residence may appear associated with sleep in some cohorts, but these variables often represent unequal exposure to structural and socioeconomic conditions rather than intrinsic biological susceptibility.^{10,12,13}

Clinical sleep disorders have distinct risk profiles. Pregnancy-related weight gain, upper-airway edema, chronic hypertension, and obesity increase the likelihood of sleep-disordered breathing. Restless legs symptoms are more common when iron stores are low and may coexist with insomnia. Loud snoring, witnessed apneas, gasping, severe daytime sleepiness, uncomfortable nocturnal leg sensations relieved by movement, or repetitive limb movements should therefore trigger focused assessment rather than generic sleep-hygiene advice.^{16,17,19,20}

Maternal and Perinatal Consequences

Sleep disturbance has been associated with gestational diabetes, hypertensive disorders, cesarean birth, preterm birth, prolonged labor, and adverse neonatal outcomes. Meta-analyses support several associations, but the magnitude and certainty vary, and residual confounding is substantial. Obesity, inflammation, socioeconomic adversity, depression, and medical comorbidity can influence both sleep and obstetric outcomes. Poor sleep should consequently be viewed as a clinically relevant risk marker and treatment target, not as proof of a direct causal pathway for every adverse event.^{19,20,21}

Sleep-disordered breathing warrants particular attention because intermittent hypoxemia, sympathetic activation, and endothelial dysfunction may compound pregnancy-related vascular stress. Prospective and population-based studies have linked maternal obstructive sleep apnea or related symptoms with hypertensive and metabolic complications, and some evidence associates late-pregnancy sleep-disordered breathing symptoms with stillbirth. These findings support timely diagnostic evaluation, especially in symptomatic women with obesity or hypertension, while avoiding the assumption that questionnaires alone establish obstructive sleep apnea.^{20,21,22}

Antenatal Sleep and Postpartum Depression

The most consistent mental-health signal concerns depression. Meta-analyses of observational studies show that poorer antenatal sleep quality and sleep disorders are associated with greater depressive symptoms during pregnancy and higher risk of postpartum depression. Longitudinal cohorts further indicate that insomnia in pregnancy can predict postpartum depressive symptoms after adjustment for several baseline factors. Nevertheless, self-reported sleep and depressive scales share negatively toned items, and incomplete adjustment for antenatal depression may inflate associations.^{8,9,23}

Timing matters. Persistent poor sleep or a worsening trajectory across pregnancy may be more informative than a single late-gestation measurement. Postpartum sleep is then disrupted by infant feeding, infant illness, shared-care arrangements, pain, and the mother's own recovery. Antenatal vulnerability and postnatal sleep loss can therefore interact: a woman who enters childbirth with insomnia, cognitive arousal, and limited support may have less resilience when newborn-related sleep fragmentation begins.^{10,12,23}

The clinical relationship is bidirectional. Early depressive symptoms can produce rumination, reduced daytime activity, irregular sleep timing, and prolonged time in bed, all of which worsen insomnia. Poor sleep can in turn impair emotional regulation, amplify negative bias, increase fatigue, and reduce capacity to use social support. For this reason, treating sleep without reassessing mood is incomplete, while treating depression without asking about insomnia may leave a potent maintaining factor unaddressed.^{5,8,23}

Antenatal Sleep and Postpartum Anxiety

Postpartum anxiety has received less sleep-focused research than postpartum depression despite frequent co-occurrence. A prospective birth cohort of 237 women reported poorer sleep during pregnancy in 58.2% and found positive correlations between antenatal sleep-quality scores and both state and trait anxiety after delivery. This supports clinical screening but does not establish causality because anxiety during pregnancy and other confounders may lie on the pathway.²⁴

Anxiety can be generalized, panic-related, obsessive-compulsive, trauma-related, or specifically focused on the infant's health, feeding, or sleep. Hypervigilance may prevent a mother from sleeping even when another caregiver is available, while repeated checking and catastrophic interpretation of normal infant behavior sustain arousal. Population evidence confirms that postnatal anxiety is common and associated with demographic and socioeconomic factors, emphasizing the need to ask directly rather than infer anxiety from depression scores alone.²⁵

Selected Evidence Linking Sleep and Perinatal Mental Health

Study	Design	Clinical signal
Sedov et al., 2018	Meta-analysis	Poor sleep quality was common and increased with advancing gestation. [3]
Fu et al., 2023	Meta-analysis	Antenatal poor sleep was associated with perinatal depression. [8]
Maghami et al., 2021	Systematic review/meta-analysis	Pregnancy sleep disorders were associated with postpartum depression. [9]
Dørheim et al., 2014	Population cohort	Insomnia in pregnancy predicted postpartum depression after adjustment. [23]
Alizadeh et al., 2024	Prospective birth cohort	Poor antenatal sleep correlated with postpartum state and trait anxiety. [24]

Shared Biological and Psychosocial Pathways

Several pathways can plausibly connect sleep with emotional health. Insomnia increases hypothalamic-pituitary-adrenal activation, sympathetic tone, and cognitive arousal; stress hormones and inflammatory signaling can also disrupt sleep continuity. Pregnancy already involves major immune and endocrine adaptation, making directionality difficult to separate. Studies demonstrating inflammatory gene-expression differences in pregnant women with sleep disturbance support biological plausibility but do not prove that inflammation mediates postpartum depression or anxiety.^{26,27,28}

Sleep loss also weakens top-down emotion regulation and increases reactivity to threat. Rumination, worry about childbirth, and maladaptive beliefs such as needing to force sleep can prolong wakefulness. Severe prenatal depression combined with poor sleep and impaired decision-making has been associated with suicidal ideation, underscoring that sleep complaints can identify a woman who requires immediate mental-health assessment rather than a routine lifestyle leaflet.^{1,29}

Psychosocial context may be the strongest modifier. Financial strain, insecure housing, relationship conflict, inadequate partner support, and competing care responsibilities reduce both sleep opportunity and access to treatment. Umbrella-review evidence on postpartum depression identifies previous depression, anxiety, stressful life events, limited support, and obstetric or infant complications among recurring risk domains. Sleep screening is therefore most useful when embedded in a whole-person assessment rather than isolated from family and social circumstances.³⁰

Assessment in Family Medicine

A practical sleep history should cover bedtime and wake time, sleep latency, awakenings, early waking, naps, daytime sleepiness, snoring or witnessed apneas, restless legs symptoms, shift work, caffeine, medication, pain, reflux, nocturia, and the effect on functioning. The clinician should distinguish insufficient opportunity from insomnia, and both from sleep-disordered breathing or movement disorders. Asking what prevents sleep and what happens the next day often yields more actionable information than a single rating of sleep quality.^{2,15,17}

Validated tools can improve consistency. The Pittsburgh Sleep Quality Index measures several dimensions over the previous month and is widely used in pregnancy research, but it is a screening and severity instrument rather than a diagnostic test. The Insomnia Severity Index is shorter and focuses more directly on insomnia symptoms and impairment. Results should be interpreted with the clinical history, gestational stage, literacy, language validation, and comorbid symptoms.^{31,32}

Mental-health screening should occur alongside sleep assessment. The Edinburgh Postnatal Depression Scale is the most established perinatal instrument and includes a self-harm item that requires direct clinical follow-up. Arabic validation



supports its use in regional practice when the correct version and cutoff are applied. Anxiety may be assessed with a validated general or perinatal measure; the State-Trait Anxiety Inventory is extensively used in research, although its length may limit routine primary-care use.^{6,33,34,35}

Screening is only ethical when it activates care. Any positive self-harm response, suicidal intent, psychosis, mania, severe agitation, inability to sleep for prolonged periods with behavioral change, or concern about infant safety requires same-day risk assessment and urgent referral. Bipolar disorder must be considered before antidepressant initiation. Clinicians should also identify domestic violence, substance use, severe anemia, thyroid dysfunction, preeclampsia, and other medical explanations for deterioration.^{5,6}

Interventions During Pregnancy

Education should normalize common pregnancy-related sleep change without normalizing severe impairment. Helpful measures include a regular wake time, sufficient sleep opportunity, morning light, appropriate daytime activity, reduced evening light and stimulating media, strategic rather than prolonged naps, and avoidance of late caffeine. Side-sleeping aids, reflux management, pain treatment, and planned nocturnal support may address specific barriers. Sleep hygiene alone has modest evidence and should not be presented as definitive treatment for established insomnia.^{2,15,36}

Cognitive behavioral therapy for insomnia is the best-supported first-line treatment. It combines stimulus control, carefully adapted sleep scheduling, cognitive work, relaxation, and relapse prevention. In a randomized trial of 194 pregnant women, Manber et al. found a greater reduction in insomnia severity with cognitive behavioral therapy and faster remission than an active control. A separate randomized trial showed that digital cognitive behavioral therapy produced large improvements in insomnia symptoms, supporting scalable delivery when trained therapists are scarce.^{37,38}

Newer evidence extends these findings. A 2025 telemedicine trial reported that cognitive behavioral therapy for insomnia and a perinatal mindfulness-based sleep program improved prenatal insomnia, with reduction in nocturnal cognitive arousal acting as an important mechanism. A three-arm trial showed that therapist-assisted cognitive behavioral therapy during pregnancy and postpartum reduced prenatal insomnia and prevented postpartum insomnia through 12 months more effectively than sleep-hygiene education, whereas a responsive bassinet did not significantly reduce the primary postpartum insomnia outcome.^{39,40}

A 2026 secondary analysis of the prenatal telemedicine trial found that both cognitive behavioral therapy and the mindfulness-based program improved bedtime procrastination and positive affect, with large anxiolytic effects among participants who had anxiety symptoms. These findings are promising but exploratory. They do not establish that sleep treatment alone prevents postpartum depression or anxiety in unselected populations, and mental-health symptoms still require direct evidence-based care.⁴¹

Medication decisions require individualized risk-benefit assessment. The clinician should first treat contributing pain, reflux, iron deficiency, or psychiatric illness and avoid assuming that nonprescription products are harmless. Sedating antihistamines, hypnotics, antidepressants, and other agents differ in evidence, maternal adverse effects, neonatal adaptation concerns, and lactation compatibility. Restless legs syndrome should prompt assessment of iron status and nonpharmacological measures, while suspected obstructive sleep apnea warrants objective testing and treatment rather than sedative prescribing.^{15,42,43}

Postpartum Sleep Protection and Mental-Health Care

After birth, advice must reflect infant feeding, recovery, household resources, and safety. A rigid instruction to sleep whenever the baby sleeps can feel dismissive and may be impossible. A more useful plan protects one predictable block of maternal sleep when feasible, shares nonfeeding care, limits nonessential nighttime tasks, treats pain, and anticipates periods of increased infant waking. Safe infant-sleep guidance must remain separate from strategies to improve maternal sleep.^{40,44}

A 2025 systematic review and meta-analysis concluded that postpartum sleep interventions were associated with greater reductions in depressive symptom severity, although intervention type and study quality varied. This supports sleep as a legitimate component of postpartum recovery while stopping short of treating it as a stand-alone cure. Untreated postpartum depression has broad maternal, infant, and relational consequences, so persistent low mood, loss of pleasure, excessive guilt, panic, intrusive thoughts, or functional decline requires structured treatment and follow-up.^{44,45}

A Family Medicine Stepped-Care Pathway

Family physicians can connect antenatal screening, chronic-disease care, postpartum follow-up, and infant visits. At each contact, a brief two-domain screen is efficient: ask about sleep quality and daytime impairment, then assess depression, anxiety, safety, and functioning. Positive findings lead to a focused sleep-disorder differential and a mental-health



assessment rather than automatic reassurance. The postpartum process should be longitudinal, with early contact and comprehensive review rather than a single delayed encounter.^{6,46}

Regional context matters. Systematic-review evidence indicates a substantial burden of postpartum depression in the Middle East, while an Upper Egypt primary-health-care study documented clinically important prevalence and predictors in routine services. Stigma, limited specialist access, transportation, cost, and family decision-making can delay care. Collaborative management using family physicians, obstetric clinicians, mental-health professionals, sleep services, nurses, and community workers can reduce fragmentation.^{47,48}

Stepped care begins with education, correction of modifiable contributors, and behavioral sleep treatment for mild to moderate insomnia. Moderate or persistent depression and anxiety require psychotherapy and, when indicated, pharmacotherapy based on perinatal guidance. Suspected sleep apnea, severe restless legs syndrome, treatment-resistant insomnia, bipolarity, suicidality, or psychosis requires specialist involvement. The plan should specify who will contact the patient, when symptoms will be reassessed, which scale or functional target will be repeated, and what constitutes escalation.^{6,15,42,43}

The economic argument is also relevant to primary care. Untreated perinatal mood and anxiety disorders impose costs through health-care use, productivity loss, maternal morbidity, and effects on the child. A brief screen has little value if referral is inaccessible, but integrated sleep and mental-health pathways may identify modifiable problems before crisis-level use of services. Future implementation studies should measure access, adherence, equity, maternal functioning, infant outcomes, and cost rather than symptom scores alone.⁴⁹

Table 2. Practical Screening and Response Framework

Step	Assess	Action
Brief screen	Sleep quality, impairment, EPDS/validated mood and anxiety tool	Proceed to focused assessment when positive
Specific disorder	Snoring/apneas, restless legs, pain, reflux, insufficient opportunity	Treat contributor or arrange objective testing/referral
Safety	Self-harm, psychosis, mania, inability to care for self/infant	Same-day risk assessment and urgent specialist care
First-line sleep care	Adapted CBT-I, regular wake time, light/activity, planned support	Reassess symptoms and function within a defined interval
Integrated follow-up	Mood, anxiety, sleep, medication, social support, infant-related disruption	Escalate or coordinate care if response is incomplete

Abbreviations: CBT-I, cognitive behavioral therapy for insomnia; EPDS, Edinburgh Postnatal Depression Scale.

Evidence Limitations and Research Priorities

Most evidence is observational and relies on self-report. Sleep and mood scales overlap in fatigue, concentration, and subjective distress, and many studies measure exposure and outcome at only one or two time points. Baseline psychiatric history, medication, partner support, infant temperament, feeding pattern, obstetric complications, and socioeconomic adversity are not consistently controlled. Associations should therefore be described as risk relationships, not proof that antenatal sleep disturbance independently causes postpartum mental illness.^{8,9,10,24}

Future cohorts should use repeated multidimensional sleep measures from early pregnancy through the first postpartum year, combine validated questionnaires with actigraphy or polysomnography in informative subgroups, and distinguish insomnia disorder from expected infant-related sleep interruption. Trials should test whether early identification and treatment of antenatal insomnia prevents clinically diagnosed postpartum depression or anxiety, not merely whether sleep scores improve. Inclusion of rural, low-resource, shift-working, medically complicated, and culturally diverse populations is essential for generalizable family-medicine recommendations.^{39,40,41,42}



Conclusion

Sleep disturbance during pregnancy is common, clinically meaningful, and closely intertwined with postpartum depression and anxiety. The association is supported by systematic reviews and prospective studies but remains bidirectional and vulnerable to confounding. The practical implication is not to label every tired pregnant woman as ill, nor to dismiss severe sleep impairment as normal. Family physicians should assess sleep opportunity, insomnia, specific sleep disorders, mood, anxiety, safety, and social context together. Adapted cognitive behavioral therapy for insomnia has the strongest treatment evidence, while medical contributors and perinatal mental-health disorders require direct management. Integrated screening linked to stepped care and planned follow-up offers the most defensible route from evidence to better maternal and family outcomes.

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