

Sleep Disordered Breathing and Adverse Pregnancy Outcomes



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KEYWORDS

• Obstructive sleep apnea • Pregnancy • Preeclampsia • Obesity

KEY POINTS

- Sleep disordered breathing is likely underdiagnosed among women of reproductive age.
- Current guidelines for screening and diagnosis of obstructive sleep apnea follow those of the nonpregnant population.
- Sleep disordered breathing in pregnancy is associated with gestational diabetes, hypertension, and fetal growth abnormalities.
- Limited research exists regarding treatment of sleep disordered breathing in pregnancy.

INTRODUCTION

Sleep disordered breathing (SDB) encompasses a group of disorders characterized by abnormalities in respiration and ventilation occurring during sleep. These disorders range from snoring to the most severe form, obstructive sleep apnea (OSA). A substantial body of evidence shows an association between OSA and SDB and morbidities, including diabetes mellitus, heart disease, and stroke, in the nonpregnant population.^{1,2} This article reviews the prevalence, risk factors, diagnosis, associated pregnancy morbidities, and treatment options for SDB among pregnant women.

EPIDEMIOLOGY

An estimated 40 million American have a sleep disorder; of these, 18 million have OSA.³ Although OSA occurs most often in elderly men, 0.6% to 15% of

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reproductive-aged women have OSA.^{4,5} Approximately 90% of women with OSA may be undiagnosed.⁶ Causes for underdiagnosis in women include a lack of identification by the physician, attribution of symptoms to alternative causes, and a tendency to present with unconventional symptoms of depression and anxiety.^{7,8} Several studies show a similar prevalence among pregnant populations. Olivarez and colleagues⁹ performed sleep studies on 100 pregnant women at a mean gestational age of 32 weeks, hospitalized for a variety of obstetric and nonobstetric medical complications. The investigators noted a 20% incidence of SDB (apnea hypopnea index [AHI] ≥ 5); mean AHI was 12.2.⁹ Louis and colleagues¹⁰ noted an OSA prevalence of 15.4% in a study assessing SDB with ambulatory sleep assessments in 175 obese pregnant women with an average gestational age of 21 weeks. In addition, the prevalence seems to increase with advancing gestational age.^{11,12} Plen and colleagues¹² studied 105 subjects with in-laboratory polysomnography (PSG). SDB was present in 10.5% of women in the first trimester (median, 12.1 weeks). By the third trimester (median, 33.6 weeks), the prevalence increased to 26.7%.

RISK FACTORS

Pregnancy-specific risk factors for SDB are ill defined. Prior studies showed an association between obesity and increasing maternal age, which are known risk factors for SDB outside of pregnancy, with SDB in early pregnancy.^{11,12} In theory, gestational weight gain may affect the development of SDB in later gestation. Limited studies of SDB across pregnancy did not note any association between gestational weight gain and the development of SDB in the third trimester.¹² At present, because of limited data, providers may use the risk factors noted in the general populations as indicators for screening and testing.

Risk factors for SDB in the general population include³:

- Male gender
- Obesity
- Increased neck circumference
- Older age
- African American and Asian race
- Craniofacial abnormalities^{3,13}

Differences in craniofacial structure lead to increased risk among specific racial backgrounds. In addition, risk increases as body mass index (BMI), neck circumference, and waist/hip ratio increase.⁴

SCREENING IN PREGNANCY

Recognition and diagnosis of OSA in pregnancy can be difficult. Typical OSA symptoms, including excessive daytime sleepiness, fatigue, and frequent nocturnal waking, overlap with normal changes of pregnancy. Outside of pregnancy, providers use screening tools such as the Berlin Questionnaire and the Epworth Sleepiness Scale to identify patients at risk for OSA, who require further testing. Because of the high prevalence of excessive daytime sleepiness in pregnancy, these validated questionnaires have not been predictive of SDB in the pregnant population.^{14–18} A study using PSG to assess for SDB in the first and third trimesters found maternal weight before pregnancy and maternal age to be the major predictors of SDB risk.¹² Among nonpregnant patients, habitual snoring has good correlation with PSG and may be an important symptom to elicit.^{19,20} Despite these studies, no predominant screening strategy for pregnant women exists. In the

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