

# Study shows link between sleep apnea and hospital maternal deaths

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Dr. Judette Louis, assistant professor of obstetrics and gynecology at the USF Health Morsani College of Medicine, led the large-scale national study appearing in the journal *Sleep*. She specializes in maternal-fetal medicine, working out of Tampa General Hospital. Credit: University of South Florida

Pregnant women with obstructive sleep apnea are more than five times

as likely to die in the hospital than those without the sleep disorder, a comprehensive national study by the University of South Florida researchers found.

Among delivery-related hospital discharges, sleep apnea was also associated with an increase in severe medical conditions that are top causes of maternal death, including preeclampsia, eclampsia, an enlarged heart and pulmonary blood clots, reported the study published online this month in the journal *Sleep*.

Sleep apnea causes repeated awakenings and pauses in breathing during the night. Previous smaller studies have found that the condition increases the risk for poor pregnancy outcomes, including preeclampsia ([high blood pressure](#) in pregnancy associated with loss of protein in the urine), restricted growth of the fetus, preterm delivery and [gestational diabetes](#). Obesity appears to contribute to the adverse effects.

However, the USF study provided the first large-scale U.S. analysis of the association between sleep apnea and maternal deaths.

"The astounding association with maternal death was surprising," said lead author Judette Louis, MD, MPH, assistant professor of obstetrics and gynecology at the USF Health Morsani College of Medicine who works out of Tampa General Hospital. "I did not expect to find such a difference in mortality between [pregnant women](#) who had sleep apnea and those who did not, especially when we controlled for obesity and other complicating factors.

While more study is needed, the increased likelihood of death for those with sleep apnea may be explained in part by the physiological demands of pregnancy, she said. "Underlying damage or chronic disease caused by sleep apnea may be exacerbated by the stresses of pregnancy."

Maternal death rates have increased slightly in recent years, and obesity is one suspected reason.

"Our study indicates that sleep apnea may also play a role, whether a woman is obese or not," said Dr. Louis, who holds a joint appointment in the USF College of Public Health's Department of Community and Family Health. "It's important for obstetricians and primary care practitioners to identify sleep apnea in younger women of reproductive age, convey its risk, and treat the condition before pregnancy."

The researchers drew upon a nationally representative sample of 55 million maternal-related hospital discharges from 1998 to 2009 – women who were pregnant or gave birth while in the hospital. They identified those with sleep apnea diagnoses and examined the links between this sleep-disordered breathing and poor pregnancy health outcomes, including in-hospital deaths.

Among the retrospective study's findings:

- Women with sleep apnea during pregnancy were more likely to experience serious medical conditions and pregnancy-related complications than women without sleep apnea diagnoses.
- The strongest associations were with the following [medical conditions](#): cardiomyopathy (an enlarged heart), heart failure and pulmonary edema (fluid build-up in the lungs).
- Among pregnancy-related complications, sleep apnea was associated with a greater likelihood of eclampsia and preeclampsia as well as gestational diabetes and gestational high blood pressure, even after controlling for obesity.
- Even after adjusting for potentially life-threatening cardiovascular and metabolic conditions, women with sleep apnea were five times more likely to die before discharge from the hospital than their counterparts without sleep apnea.

- The increase in the rate of sleep apnea among pregnancy-related discharges over the study period coincided with a rise in obesity rates.
- With the exception of cesarean delivery, gestational hypertension and stillbirth, the likelihood of potentially life-threatening illnesses and [maternal death](#) were higher for women with sleep apnea – irrespective of obesity.
- The presence of obesity appeared to intensify the effects of risks of cardiovascular disease in pregnant women with [sleep apnea](#).

**More information:** Louis JM, Mogos MF, Salemi JL, Redline S, Salihu HM. "Obstructive sleep apnea and severe maternal-infant morbidity/mortality in the United States, 1998-2009." *Sleep*, 2014;37(5):843-849.

Provided by University of South Florida

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