

Dim lights before bedtime to reduce risk of gestational diabetes

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Pregnant persons should dim the lights in their home and turn off or at least dim their screens (computer monitors and smartphones) a few hours before bedtime to reduce the risk of gestational diabetes mellitus,

a new Northwestern Medicine study shows.

Women who developed [gestational diabetes](#) mellitus in the multi-site study had greater light exposure in the three hours before sleep onset. They did not differ in their light exposure during daytime or sleep or in their activity levels compared to those who did not develop it.

"Our study suggests that light exposure before bedtime may be an under-recognized yet easily modifiable risk factor of gestational diabetes," said lead study author Dr. Minjee Kim, assistant professor of neurology at Northwestern University Feinberg School of Medicine and a Northwestern Medicine neurologist.

Growing evidence suggests exposure to light at night before bedtime may be linked to impaired glucose regulation in non-pregnant adults. However, little is known about the effect of evening light exposure during pregnancy on the risk of developing gestational diabetes, a common pregnancy complication with significant health implications for both mother and offspring.

This is believed to be one of the first multi-site studies to examine light exposure before sleep on the risk of developing gestational diabetes.

The study will be published March 10 in the *American Journal of Obstetrics and Gynecology Maternal Fetal Medicine*.

Gestational diabetes rise is 'alarming'

Gestational diabetes is on the rise in the U.S. and globally. About 4.5% of first-time [pregnant women](#) with a baby born between 2011 and 2013 developed gestational diabetes, which has been increasing on average 3.4% per three-year period until 2019. In 2020, the rate of gestational diabetes was 7.8% of all births in the U.S.

"It's alarming," Kim said. "Gestational diabetes is known to increase obstetric complications, and the mother's risk of diabetes, [heart disease](#) and dementia. The offspring also are more likely to have obesity and hypertension as they grow up."

Data show that women who have gestational diabetes are nearly 10 times more likely to develop type 2 diabetes mellitus compared to those do not have glucose issues during pregnancy, Kim said.

Bright light exposure prior to sleep can come from [bright lights](#) in your home and from devices like TVs, computers and smartphones.

"We don't think about the potential harm of keeping the environment bright from the moment we wake up until we go to bed," Kim said. "But it should be pretty dim for several hours before we go to bed. We probably don't need that much light for whatever we do routinely in the evening."

Scientists don't know which source of bright light causes the problem, but it might all add up, Kim said.

"Try to reduce whatever light is in your environment in those three hours before you go to bed," Kim said. "It's best not to use your computer or phone during this period. But if you have to use them, keep the screens as dim as possible," Kim said, suggesting people use the night light option and turn off the blue light.

If pregnant persons develop gestational diabetes with the first pregnancy, they are more likely to have it with the next pregnancy.

Pre-sleep light exposure increases heart rate and may lead to abdominal obesity, insulin resistance,

increased blood pressure

Pre-sleep light exposure may affect glucose metabolism through sympathetic overactivity, meaning the heart rate goes up before bed when it should go down. "It seems there is inappropriate activation of the fight or flight response when it is time to rest," Kim said.

Data shows the sympathetic overactivity may lead to cardiometabolic disease, which is a cluster of conditions including abdominal obesity, [insulin resistance](#), increased [blood pressure](#) and an imbalance of lipids, all leading to cardiovascular disease.

The study of 741 women in their [second trimester](#) was conducted at eight clinical U.S. sites between 2011 and 2013. The participants' light exposure was measured by an actigraph worn on their wrists. The women were measured during the second trimester of pregnancy, the time when they receive routine screening for gestational diabetes.

After adjusting separately for age, BMI, race/ethnicity, education, commercial insurance, employment schedule, season, sleep duration, sleep midpoint, sleep regularity index, and daytime light exposure, pre-sleep light exposure remained significantly associated with gestational diabetes.

The growing rate of gestational diabetes has been partially attributed to increasing [body mass index](#) and the older age of pregnant persons.

"But even after adjusting for BMI and age, gestational diabetes is still rising," Kim said. "We have a lot to prove, but my personal worry is that light may be silently contributing to this problem without most people realizing the potential harm."

Losing body weight and exercising also reduce the risk of developing

gestational [diabetes](#), which are important but take some effort.

Turning down lights is an easy modification

"Turning down the lights is an easy modification you can make," Kim said.

"Now I'm the light police at home," Kim said. "I see all this light I never thought about before. I try to dim the light as much as possible. Just for evening activities such as dinner and bathing the kids, you don't need bright light."

"This study highlights the importance of reducing [light](#) exposure in the hours before bedtime" said senior author Kathryn Reid, research professor of neurology at Feinberg.

The name of the paper is "The association between [light exposure](#) before bedtime in pregnancy and the risk of developing [gestational diabetes mellitus](#)."

Other Northwestern authors are Dr. Phyllis Zee, Rosemary Braun, Blas Garcia-Canga and Michael Wolf.

More information: "The association between light exposure before bedtime in pregnancy and the risk of developing gestational diabetes mellitus.", *American Journal of Obstetrics & Gynecology MFM* (2023). [dx.doi.org/10.1016/j.ajogmf.2023.100922](https://doi.org/10.1016/j.ajogmf.2023.100922)

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