Sleep Patterns in Pregnancy and Fetal Growth

To the Editor:

In their article “Sleep Patterns in Late Pregnancy and Risk of Preterm Birth and Fetal Growth Restriction,” Micheli et al reported a 2-fold increase in the risk of fetal growth restriction in pregnant women with severe snoring in the last trimester of pregnancy. In the discussion section, the authors stated that their results were in accordance with the findings of Bourjeily et al. However, this statement is not entirely correct. Although Bourjeily’s study showed an association between snoring and preterm birth (which was likely mediated by preeclampsia), it did not show a significant association between sleep-disordered breathing and growth restriction (odds ratio = 1.9 [95% confidence interval = 0.8–4.3]). The discrepancy may be due to the difference in the definition of growth restriction—Micheli et al corrected for familial characteristics (maternal and paternal height and age, as well as prepregnancy maternal weight), whereas Bourjeily et al did not—or to the difference in the sample size of snorers (n = 48 in Micheli’s study vs. n = 333 in Bourjeily’s study).

Micheli et al also referred to the study by Sahin et al as another study supporting their findings. Sahin’s study’s primary goal was evaluation of clinical tools in predicting obstructive sleep apnea and fetal heart rate variability in response to apnea, and not growth restriction. Their study found only 4 women with obstructive sleep apnea who had other comorbidities. These data are hardly supportive of this hypothesis.

Despite body mass indices (BMIs) that are likely comparable with other studies performed in pregnant women, the incidence of severe snoring in Micheli’s study is unexpectedly low—4% versus 14% to 45% in other studies of women with similar age and race characteristics. This rate of snoring in Micheli’s study is close to the rate of snoring in nonpregnant women. It would be helpful to the reader if the authors mentioned mean BMI in their entire sample and offered an explanation for their low rates of snoring.

The question of the effect of snoring on growth restriction remains a controversial one, with some studies showing a significant effect and others failing to show such an effect. These discrepancies may be related to differences in sample size, lack of adjustment for confounders, variation in outcome definition, possible difficulties with appropriate dating of pregnancies, and lack of serial fetal growth assessments.

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REFERENCES

The authors respond:

We read with great interest the recent letter by Zouein and Bourjeily commenting on our article on “Sleep patterns in late pregnancy and risk of preterm birth and fetal growth restriction.” The main point in our discussion was that there exists little and controversial epidemiologic evidence on sleep behaviors during pregnancy and their association with birth outcomes. Zouein and Bourjeily agree with us on this. They mention that we erroneously quoted the study by Bourjeily et al as having similar findings. We stated that the risk ratio of 2 that we found was similar to the odds ratio of 1.9 reported by Bourjeily et al. Although that estimate was not statistically significant, this seems a reasonable statement to us.

Zouein and Bourjeily are right in stressing that the prevalence of severe snoring in our study population (14% occasionally snorers and 4% severe snorers) is lower than in other studies. We are aware of the issues, and we should have discussed it in our paper. The prevalence...
of obesity was twice as high in the study by Bourjeily et al (22% women had a prepregnancy BMI ≥30) compared with our cohort (11% women had a prepregnancy BMI ≥30; prepregnancy mean BMI = 24.2 [SD = 4.8]), and this could partially explain the observed differences. Other sociocultural, nutritional (for example the high adherence to Mediterranean diet), and environmental differences in Crete could also contribute to the low prevalence of severe snoring. Future longitudinal studies are needed to confirm these findings, to better understand the complex underlying processes, and to develop preventive-care strategies based on sleep-quality improvement during pregnancy.

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