

Infant sleep duration associated with mother's level of education and prenatal depression

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A new study analyzing data from Canadian parents has found that babies sleep less at three months of age if their mothers do not have a university

degree, experienced depression during pregnancy or had an emergency cesarean-section delivery.

The study, which examined associations between a mother's level of education, prenatal [depression](#), method of [delivery](#) and her infant's sleep duration, was published this month in *Sleep Medicine*. It found that infants born to mothers without a university degree slept an average of 13.94 hours per day—23 minutes less than infants born to mothers with a university degree, and just short of the National Sleep Foundation guidelines of an average of 14-17 hours of sleep per day at three months of age.

The researchers analyzed data from 619 infants and their mothers participating in AllerGen's CHILD Cohort Study—a national birth cohort study collecting a wide range of health, lifestyle, genetic and environmental exposure information from nearly 3,500 children and their families from pregnancy to adolescence.

"Sleep affects a baby's growth, learning and emotional development, and is one of the most common concerns of new parents," said Piush Mandhane, an associate professor of pediatrics at the University of Alberta and one of the study's lead authors.

"While earlier research has linked a mother's socioeconomic status, including level of education, to shorter infant sleep duration, we have not really understood the factors at play. Our study revealed that 30 per cent of the effect of maternal education on infant sleep duration is actually mediated by a mother's prenatal depression, as well as the type of delivery."

Specifically, the researchers found [mothers](#) without a university degree to be at significantly higher risk of having symptoms of depression during both the prenatal and postnatal periods, or the prenatal period

alone, compared to women with a [university degree](#).

There are several possible explanations for the association between maternal depression and infant sleep, according to co-lead author Anita Kozyrskyj, also a professor of pediatrics at the U of A. "Mothers in distress tend to have sleep problems during pregnancy, which can be 'transmitted' to the fetus via the mother's circadian clock and melatonin levels," she said. "Maternal depression and emergency cesarean section also both lead to elevated free cortisol levels, which, in turn, may cause an exaggerated stress response in infants that negatively impacts their sleep."

Further, the researchers found that the method of delivery independently predicted infant sleep duration, with infants delivered by emergency [cesarean section](#) sleeping approximately one hour less per day than [infants](#) born by vaginal delivery.

"This was an interesting finding, as we did not observe an association between shorter infant sleep and scheduled cesarean sections or vaginal deliveries," commented first author Brittany Matenchuk, an AllerGen trainee and a former Master's student at the U of A.

"While we are still at an early stage of unravelling the underlying biologic mechanisms, our study suggests that prenatal depression and birth mode are potential targets for health-care professionals and policy makers to improve infant [sleep duration](#). Mothers who experience prenatal depression or an emergency cesarean delivery may benefit from support so that infant sleep problems do not persist into childhood."

According to the team, previous studies have shown that sleep has a large impact on infant emotional and behavioural development. It may also affect how they perform cognitively later in life.

"We need to support moms before the child is born," added Mandhane. "And if we can start to promote healthy sleep early on, three months of age onward, I think that just is better for families in general."

More information: Brittany A. Matenchuk et al, Prenatal Depression and Birth Mode Sequentially Mediate Maternal Education's Influence on Infant Sleep Duration, *Sleep Medicine* (2019). [DOI: 10.1016/j.sleep.2019.01.015](https://doi.org/10.1016/j.sleep.2019.01.015)

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