

# Sleep Disturbances Among Former Term Neonates Exposed to In Utero Tetrahydrocannabinol (THC) at Preschool Age

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**Introduction:** Prenatal cannabis use has the potential to harm the developing brain.

Endocannabinoid receptors are found in many brain regions that control sleep and may influence neuronal development. No studies to date have examined children's sleep following THC exposure.

**Objectives:** To determine if prenatal THC exposure is associated with neonatal head growth and subsequent sleep disturbances at preschool age among neonates born at term.

**Methods:** Neonates with and without prenatal THC exposure born at Ascension St. John Hospital from 2014-2016 were studied. Data on maternal and neonatal demographic and growth variables were collected. A subset of participants was followed to 3-6 years to assess sleep outcomes using the Sleep Disturbance Scale for Children (SDSC). Total sleep and subscale scores were calculated; mean scores were compared between cases and controls. Data were analyzed using Student's t-test, the Mann-Whitney U test, the chi-squared test and linear regression.

**Results:** We studied 237 subjects, with 48 cases and controls (n=92) participating in the sleep study at preschool age. In unadjusted analyses, children exposed to THC prenatally had significant growth restriction, lower socioeconomic status and higher SDSC scores as compared to children who were unexposed (all  $p < 0.05$ ). On multivariable analysis, only head circumference percentile and THC exposure remained associated with SDSC score.

Characteristic	Slope	p-value	95% Confidence Interval
Age	-1.57	0.54	-6.6, 3.5
Race	-1.84	0.77	-14.1, 10.5
<b>Head Circumference %</b>	<b>-0.20</b>	<b>0.01</b>	<b>-0.3, -0.6</b>
<b>THC exposure</b>	<b>12.70</b>	<b>0.02</b>	<b>2.4, 23.0</b>
Insurance Type	2.44	0.71	-10.7, 15.5
Income quartiles (zip code based)	2.94	0.25	-2.1, 8.0

**Conclusion:** Our prospective study found that prenatal THC exposure is associated with head circumference at birth and sleep disturbances in early childhood; this has important implications for child development.