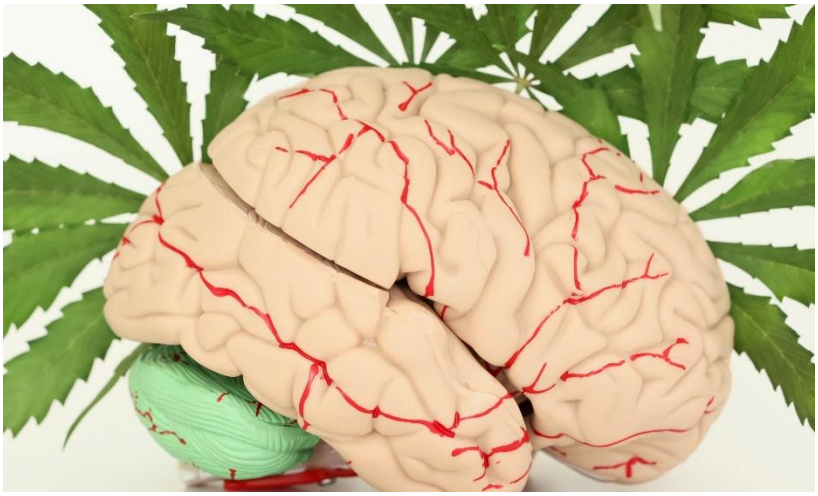
On Thinking Tests Children Exposed to Cannabis and Tobacco before Birth Scored Lower

Rates of cannabis use among expecting mothers are climbing in high-income nations, and in the United States (U.S.) roughly half of those users also smoke tobacco. In a recent study published, a team of researchers in Quebec, Canada, examined whether exposure to cannabis and tobacco before birth was associated with differences in reasoning and knowledge in children.



Study

In this study, the researchers analyzed baseline data from the Adolescent Brain Cognitive Development (ABCD) study, a large ongoing project that follows children across the U.S.

The team analyzed data from 11,865 children aged 9 to 11 years. Children with missing information on prenatal substance use, cognitive scores, or background factors, or whose mothers were reported to have used illicit substances during pregnancy or consumed seven or more alcoholic drinks per week after pregnancy recognition, were excluded. In cases of triplets or twins, one child was chosen at random. The final sample included 8,706 children.

Prenatal exposure was based on retrospective reports from the biological mother or caregiver, who reported whether the mother used a given substance before or after learning of the pregnancy. A positive answer to either question counted as exposure. Children were sorted into four groups: Exposure to both cannabis and tobacco, cannabis only, tobacco only, or neither cannabis nor tobacco.

Cognition was measured with the National Institutes of Health (NIH) Toolbox Cognition Battery. Fluid cognition combined five tests covering cognitive flexibility, attention, memory, and processing speed. Crystallized cognition combined two tests of vocabulary and reading skills.

The researchers used statistical methods to compare groups of children while accounting for siblings within the same family. They first tested whether cannabis or tobacco exposure alone related to lower scores, then whether a statistical interaction was present when both exposures were reported, which was the study's central question.

A causal diagram, or a map of how factors might influence one another, guided which background details to include, such as alcohol use during pregnancy, family income, maternal age and education, pregnancy planning, and parental mental health.

Results

The study found that children exposed to both cannabis and tobacco before birth had lower fluid cognition scores than children exposed to cannabis only or to neither substance. Crystallized cognition, by comparison, showed no statistically significant differences across groups.

Of the 8,706 children, 236 had combined exposure, 195 had cannabis only exposure, 803 had tobacco-only exposure, and 7,472 had no exposure. Mothers in the combined exposure group were the youngest at birth and had the fewest years of education, and this group also had the highest scores for parental mental health symptoms.

Neither cannabis nor tobacco exposure showed a statistically significant individual association with fluid cognition in the main-effects analysis, but the interaction between the two exposures was statistically significant. After adjustment for potential confounding factors, children exposed to cannabis only scored about 2.1 points higher on fluid cognition than co-exposed children, and those exposed to neither substance scored about 1.4 points higher.

Children exposed to tobacco only scored about 1.3 points higher, but the researchers stated the difference was not statistically significant, possibly because this group was smaller than the unexposed group, reducing statistical precision. Standardized estimates indicated small effects. The interaction estimate was also uncertain and narrowly met the statistical significance threshold. For crystallized cognition, which reflects vocabulary and reading skills, no significant interaction or group differences appeared.

The results suggest that exposure to both substances before birth may be tied to lower scores on a composite measure of reasoning, attention, memory, and processing speed in middle childhood.

The study presented some limitations. Since the design was cross-sectional, it could not establish cause. The authors also believe that as exposure was assessed based on recall of events nine to eleven years earlier, it could have been underreported. The data also lacked detail on usage patterns, dose, cannabis potency, and secondhand smoke. Co-exposure did not necessarily mean simultaneous use, since the substances could have been consumed at different times during pregnancy.

Residual genetic confounding and selection bias could also have influenced the findings. The study was not preregistered, so the analyses should be considered exploratory.

Conclusion

Overall, the study provided preliminary evidence that children exposed to both cannabis and tobacco before birth had modestly lower fluid cognition scores in middle childhood than children exposed to cannabis alone or to neither substance. Crystallized cognition showed no statistically significant differences between groups. Because fluid cognition helps predict developmental paths and daily functioning, these findings may hold clinical relevance for pregnant women who use both tobacco and cannabis. The observed differences were small, and the statistical

interaction cannot establish a direct biological effect. Further longitudinal research is needed to determine whether the association is causal.

Source:

https://www.news-medical.net/news/20261104/Children-exposed-to-cannabis-and-tobacco-before-birth-scored-lower-on-thinking-tests.aspx