

E-cigarettes might not be safe alternative in reducing harm to babies

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E-cigarettes might not be a safer alternative to smoking during pregnancy, according to the first known study into the effects of prenatal nicotine exposure on babies.

Psychologists at Durham University, UK, found that [babies](#) of mothers who smoked e-cigarettes during [pregnancy](#) displayed similar abnormal reflexes to infants whose mothers smoked [traditional cigarettes](#).

Abnormal reflexes can include a baby not grasping a finger with their hand or not being startled if the hand supporting their head is suddenly removed.

When there are a number of these abnormal reflexes, this could be a sign of impaired brain development, which should be further investigated. Normal reflexes support the development of early motor milestones, such as crawling and rolling over.

The researchers say their findings have important implications for policy guidelines regarding the use and safety of e-cigarettes during pregnancy as a method of reducing the harm caused by smoking.

They recommend that more investigation is needed into the potential effects of e-cigarettes on babies and say the only safe way of reducing harm is not to smoke during pregnancy, whether that be traditional cigarettes or e-cigarettes.

Their findings are published in the journal *E Clinical Medicine*.

E-cigarettes are often considered as a less harmful alternative to cigarettes for pregnant smokers because they don't produce toxins like carbon monoxide, but they do contain nicotine.

The Durham study looked at the neurobehavioural outcomes of 83 one-month-old babies including 44 born to mothers who did not smoke during pregnancy, 29 who smoked cigarettes and ten who smoked e-cigarettes. Babies were born at least 37 weeks into pregnancy.

Overall the researchers found that the birthweight, gestation period and head circumference of babies did not differ between those born to mothers who smoked e-cigarettes during pregnancy and those who did not smoke at all.

Babies of mothers who smoked traditional cigarettes during pregnancy had significantly lower birthweight and head circumference in comparison.

However, babies exposed to nicotine in the womb, either from cigarettes or e-cigarettes, did have a greater number of abnormal primitive reflexes, as well as marginally decreased self-regulation abilities compared to the babies of non-smokers.

Self-regulation in infants can include self-relaxation when held, how consolable they are after crying, self-quieting skills and hand-to-mouth movements. Babies who show fewer self-regulation abilities are often more irritable and have difficulty consoling themselves or being consoled by others.

The study also found that higher amounts of nicotine correlated with less motor maturity in babies, such as how floppy or rigid a baby is when held.

The researchers acknowledge that while the sample size in their study is small, their findings do give a strong indication that nicotine exposure from smoking e-cigarettes could be harmful to the development of fetuses and have called for more studies to be carried out.

Lead author Suzanne Froggatt, a Ph.D. Researcher in the Department of Psychology, Durham University, said: "Nicotine can cause widespread negative effects on the central nervous system, subsequently affecting [brain development](#), with animal studies indicating the devastating effects

within the brain.

"Although e-cigarettes might expose the mother to fewer toxins than cigarettes, given the uncontrolled amount of nicotine in e-cigarette consumption and the effects on the fetus which can be seen post-natally, we don't believe that mothers should be encouraged to use e-cigarettes during pregnancy.

"More investigation is needed into the potential harm to fetuses from e-cigarettes so [health professionals](#) can provide women with a better informed choice about harm reduction during pregnancy."

The researchers added that their findings suggest the effects of other forms of nicotine replacement therapy, such as nicotine patches, on fetal development might also need further research.

Co-author Professor Nadja Reissland, in the Department of Psychology, Durham University, said: "Mothers should not be encouraged to use e-cigarettes during pregnancy, while other forms of nicotine replacement therapy need to be researched in relation to neurobehavioural outcomes.

"Public health policymakers need to be aware that [e-cigarette](#) use is not risk free and that [nicotine](#) alone is not relatively harmless, but in fact it can have effects on the infant, despite not affecting birth outcomes."

More information: Suzanne Froggatt et al, The effects of prenatal cigarette and e-cigarette exposure on infant neurobehaviour: A comparison to a control group, *EClinicalMedicine* (2020). [DOI: 10.1016/j.eclinm.2020.100602](https://doi.org/10.1016/j.eclinm.2020.100602)

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