

## An Urgent Need to Curb the Use of E-Cigarettes or Electronic Nicotine Delivery Systems (ENDS) in Pregnant Ladies

**Rakesh Gupta\* and Meena Konada**

*Strategic Institute for Public, Health Education and Research (SIPHER), Chandigarh, India*

**\*Corresponding Author:** Rakesh Gupta, President and Director of Public Health, Strategic Institute for Public, Health Education and Research (SIPHER), Former Director of Health Services and Director of Chemical Examiner Lab, Govt. of Punjab, Chandigarh, India.

**Received:** October 01, 2021; **Published:** October 29, 2021

### What are e-cigarettes or ENDS?

E-cigarettes or electronic nicotine delivery systems (ENDS) are popularly known with various names such as JUUL, vapes, mods, pod-mods, dab pens, and tanks [1-3]. These are battery-powered devices used for smoking or vaping, that contain a flavored solution, composed of the addictive chemical, nicotine, and other products [1]. Different flavors, attractive designs of e-cigarettes, advertisements as a smoking cessation aid, are some of the marketing strategies used to lure pregnant and youth<sup>1</sup>.

E-cigarettes produce an aerosolized mixture of nicotine, propylene glycol, vegetable glycerine and other flavored chemicals that is inhaled by the users [1,2]. The age of first exposure, the administered dose and the rapidity with which it is introduced into the body, are the factors that determine the potential risk for addiction to e-cigarettes in later life [1].

### Is the prevalence of ENDS less or higher than the traditional e-cigarettes?

E-cigarettes were introduced into the US market in 2004 and the adaptability of the product was quick, despite minimal evidence of the safety of e-cigarette use in pregnancy. Pregnant women are especially keen on using e-cigarettes due to their marketing as a healthier alternative to conventional cigarettes [4,5].

PRAMS- A pregnancy risk assessment monitoring survey of the United States, 2016 - 2018, analyzed that while 56 percent quit smoking during pregnancy and smoking was continued through pregnancy by 44 percent of pregnant women. Only 15 percent of women used e-cigarettes before pregnancy [4]. Women who used ENDS during pregnancy were of 18 - 24 years of age, non-Hispanic white, with low attainment of education, had health insurance, access to WIC services, and resided in rural areas [4].

As per the report of Wagner NJ., *et al.* mean age of the pregnant women who used e-cigarettes was 27 years, and approximately 7 percent of pregnant women used e-cigarettes, and 9 percent of the sample were dual tobacco users [5].

### Are ENDS an effective smoking cessation aid: Myths or Facts?

ENDS or e-cigarettes are often marketed as a smoking cessation aid, without any evidence on their safety and efficacy [1]. ENDS have also been thought to sustain nicotine dependence in ex-smokers, due to the availability of different sizes of e-vials, uncontrolled vapes, and variable amounts of nicotine in each vial [1].

According to the reports of a study conducted by Olfson., *et al.* (2019), e-cigarette users were more likely to become daily cigarette users and develop a tobacco use disorder [6].

### What are perceptions of e-cigarettes among pregnant women?

Baez Loya S., *et al.* conducted a cross-sectional survey, during the year 2013 and found that the e-cigarettes were perceived to be less harmful, having the low potential to cause lung cancer and be a safer alternative in pregnancy compared to tobacco cigarettes. Most of the subjects in the sample were educated young adults [7].

A qualitative research study by England LJ, *et al.* that was done in the USA among women who were pregnant smokers, pregnant quitters, smokers planning to be pregnant revealed positive results. Women perceived ENDS to be “cute”, “cool”, “like a small toy” and reported trying using them as they were cheaper, have appealing flavors, use in smoke-free areas, no ash, and help with smoking cessation [8]. Some women expressed that the e-cigarettes were safer to use when kids are around, and for the ease of hiding it and using it because they won't be judged by people [8].

### What is the health effects of e-cigarette smoking during pregnancy on the fetus?

Smoking in pregnancy is a major public health concern, and nicotine is harmful to fetal development through various mechanisms. The risk to the fetus increases, with the increase in the gestational age. Exposure of fetuses to nicotine during pregnancy causes the impaired function of the neuroendocrine, reproductive, cardiovascular, and respiratory systems [9].

There is evidence of poor academic performance, behavioral problems like ADHD, aggressive disorders, future substance abuse in the later life of the children that were exposed to smoking in pregnancy [9]. In addition, second-hand exposure to aerosols containing nicotine could be dangerous to pregnant women and children [10].

Most e-cigarettes contain nicotine that can cause neurodevelopmental abnormalities of the fetus. Pregnant women who use e-cigarettes are at greater risk for stillbirth, preterm delivery and delivering small-for-gestational-age babies. Researchers have identified many harmful chemical substances including heavy metals such as cadmium, lead, nickel, and propylene glycol that can cause changes in the cardio-respiratory system of fetuses, by exposure to aerosols produced by e-cigarettes [10].

### What are the regulations and policies worldwide on ENDS?

The European Union has enacted some regulations on the strengths of nicotine fluids (maximum 2 percent) and limitations on the size of the tank (2 ml devices maximum) [10].

In Canada and Australia, e-cigarettes are not recommended during pregnancy. Similarly, the 2016 US Surgeon General report states that e-cigarettes that contain nicotine are unsafe for pregnant women. In addition, the US Preventive Services task force states that e-cigarettes flavors are harmful and e-cigarettes used in pregnancy might damage the baby's heart and lungs [11].

The New Zealand Ministry of Health classifies e-cigarettes as medicinal products and does not recommend them as a smoking cessation aid. In the UK, some major public health organizations recommend e-cigarettes as a strategy to reduce tobacco harm reduction. Due to a lack of consensus, many healthcare practitioners face challenges while navigating the harm of e-cigarettes to the general public [11].

In view of public health implications, we need to make policies which has backing of evidences and in the absence of knowledge of long-term side effects of ENDS, we need to frame laws to prevent the possible endemic. Sale of E-Cigarettes/ENDS are allowed with regulations in sixty six countries and prohibited in in forty one countries/jurisdictions including India [12].

### Recommendations to curb the use of e-cigarettes in pregnancy

Enforcement of strict marketing regulations in the advertisement of e-cigarettes as a safer alternative or smoking cessation aid, as there is not enough evidence on the safety of e-cigarettes. Training health care professionals in educating pregnant and young women on the deleterious effects of e-cigarettes. Ban on e-cigarette sales to pregnant women in the remaining countries should be encouraged.

All the above policies and regulations can gain momentum if there is further research on the effects of e-cigarettes in pregnant women and the collection of data globally about tobacco use in pregnancy.

Behavioral counseling of pregnant women in antenatal clinics by community health workers to change their perception, attitudes towards e-cigarettes can mitigate the use of e-cigarettes by women to an extent.

## Bibliography

1. Indian Council of Medical Research. "White Paper on Electronic Nicotine Delivery System". *The Indian Journal of Medical Research* 149.5 (2019): 574-583.
2. Marques P, *et al.* "An updated overview of e-cigarette impact on human health". *Respiratory Research* 22.1 (2021): 151.
3. [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/pdfs/ecigarette-or-vaping-products-visual-dictionary-508.pdf](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/pdfs/ecigarette-or-vaping-products-visual-dictionary-508.pdf)
4. Regan AK and Pereira G. "Patterns of combustible and electronic cigarette use during pregnancy and associated pregnancy outcomes". *Scientific Reports* 11 (2021): 13508.
5. Wagner NJ, *et al.* "Prevalence and Perceptions of Electronic Cigarette Use during Pregnancy". *Maternal and Child Health Journal* 21.8 (2017): 1655-1661.
6. Dugas EN, *et al.* "Type of e-liquid vaped, poly-nicotine use and nicotine dependence symptoms in young adult e-cigarette users: a descriptive study". *BMC Public Health* 20.1 (2020): 922.
7. Baeza-Loya S, *et al.* "Perceptions about e-cigarette safety may lead to e-smoking during pregnancy". *Bulletin of the Menninger Clinic* 78.3 (2014): 243-252.
8. England LJ, *et al.* "Perceptions of emerging tobacco products and nicotine replacement therapy among pregnant women and women planning a pregnancy". *Preventive Medicine Reports* 4 (2016): 481-485.
9. [https://www.researchgate.net/publication/303976341\\_The\\_effects\\_of\\_nicotine\\_on\\_human\\_fetal\\_development\\_Nicotine\\_and\\_Human\\_Development](https://www.researchgate.net/publication/303976341_The_effects_of_nicotine_on_human_fetal_development_Nicotine_and_Human_Development)
10. <https://truthinitiative.org/research-resources/emerging-tobacco-products/e-cigarettes-facts-stats-and-regulations>
11. van der Eijk Y, *et al.* "E-cigarette use in pregnancy: a human rights-based approach to policy and practice". *Acta Obstetrica Et Gynecologica Scandinavica* 96.11 (2017): 1283-1288.
12. <https://landing.ggtc.world/2020/02/24/e-cigarette-ban-regulation-global-status-as-of-february-2020/>

**Volume 10 Issue 11 November 2021**

**©All rights reserved by Rakesh Gupta and Meena Konada.**