

Vaping and Adolescent: A Growing Public Health Concern

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Dear Editor,

Tobacco use is one the leading preventable causes of death, accounting for about 8 million deaths each year¹. Electronic cigarettes (electronic nicotine delivering system – ENDS, E-Cigarette or simply a Vape) is a battery-controlled devices with an electric heater and liquid that contains nicotine, aerosolized to be inhaled. Since 2007 these commercially available products have undergone several modifications suiting consumer needs. The latest modification introduced in 2017 is pod mods and USB-like devices that contain E-liquid with high nicotine content. Since 2017, market consumption of ENDS increased exponentially, as the new modification was portable, pocket friendly, and easy to conceal. Frequent iterations and unregulated marketing have turned them into a growing public health burden, especially among the pediatric population.

Over the past few years, vaping has gained massive popularity with significantly increased prevalence amongst adolescents globally. A 10% rise was noted in adolescent smoking from 2017 to 2018 translating to 1.3 million teenagers being active ENDS consumers at the end of 2018 in the US². The US National Youth Tobacco Survey 2021 reported a staggering 2.06 million middle and high school students being active users in the past 30 days³. Countries like Canada (20%), Japan (3.5%), South Korea (10.1%) and Argentina (5.2%) have also reported a significant rise in adolescent vaping culture⁴. This rise is attributed to the adolescent experimentation urge, curiosity, easy availability of products at low cost, multitude of flavors, social influence, and misconception about safety and nicotine content. With only a handful of studies, data from low-middle-income countries (LMICS) is relatively underreported.

However, exposure to nicotine early in life harms brain development with impaired cognition and executive functioning, memory and attention deficits, mood changes and increased impulsivity⁵. It has also been found to increase pro-inflammatory markers in gingival epithelial cells with an increased risk of staphylococcus aureus colonization and oral biofilm formation⁷. The inhalant found in vape is also detrimental to the lungs. ENDS significantly alter bronchial epithelium and airway secretion. Frequent adolescent consumers are at an increased risk of stunting and altering their lung development and they may never reach their full lung function potential. This is coupled with an increased pulmonary and cardiovascular risk including greater prevalence and exacerbation of asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis, increased arterial stiffness and sympathetic tone⁶. Additionally, a large number of e-cig/vaping-associated lung injury (EVALI) cases have also been reported since the year 2019, with symptoms including dyspnea, cough, hypoxemia, opacities on chest radiograph and increased admission to ICU for life-threatening complications⁷. The unexplored chemical products in vape are associated with hepatocyte damage, elevated liver biomarkers, alteration in the gut barrier, increased susceptibility to GI infections and decreased renal function⁷.

Albeit, these are continuously evolving products, the toxicity of vapors and their health implications especially at a very young age remains poorly understood. This warrants consideration and an urgent need to regulate tobacco access and strengthen global policies to restrict marketing to curb this growing public health burden.

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CONFLICT OF INTEREST

The author agreed to the publication of this manuscript.

AUTHORS' CONTRIBUTION

AAR had given the conception of the idea, performed the literature search, manuscript drafting, and reviewed it.

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