LETTER TO EDITOR OPEN ACCESS

Vaping and Adolescent: A Growing Public Health Concern

Aniqa Abdul Rasool
Aga Khan University Hospital, Karachi, Pakistan.

Doi: https://doi.org/10.36283/PJMD12-2/013

How to cite: Rasool AA. Vaping and Adolescent: A Growing Public Health Concern. Pak J Med Dent. 2023;12(2): 70-71. doi: 10.36283/PJMD12-2/013

Dear Editor,

Tobacco use is one the leading preventabe causes of death, accounting for about 8 million deaths each year[1]. 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 US [2]. 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 days[3]. Countries like Canada (20%), Japan (3.5%), South Korea (10.1%) and Argentina (5.2%) have also reported a significant rise in adolescent vaping culture[4]. 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 impulsivity[5]. 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 formation[7]. 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 tone[6]. 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 complications[7]. 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 function[7].

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.

ACKNOWLEDGEMENTS
The author would like to acknowledge and extend her gratitude to the institution.
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.

REFERENCES
1. World Health Organization. WHO Report on the Global Tobacco Epidemic, 2021: Addressing new and emerging products. World Health Organization; 2021. Available from: https://apps.who.int/iris/bitstream/handle/10665/343287/9789240032095-eng.pdf
2. Miech R, Johnston L, O'Malley PM, Bachman JG, Patrick ME. Adolescent vaping and nicotine use in 2017–2018—US national estimates. N Engl J Med. 2019;380(2):192-193. doi: 10.1056/NEJMc1814130
3. Park-Lee E, Ren C, Sawdey MD, Gentzke AS, Cornelius M, Jamal A, *et al*. Notes from the field: e-cigarette use among middle and high school students—National Youth Tobacco Survey, United States, 2021. MMWR Morb Mortal Wkly Rep. 2021; 70(39): 1387-1389. doi: 10.15585/mmwr.mm7039a4
4. Lyzwinski LN, Naslund JA, Miller CJ, Eisenberg MJ. Global youth vaping and respiratory health: epidemiology, interventions, and policies. NPJ Prim Care Respir Med. 2022;32(1):1-10. doi: 10.1038/s41533-022-00277-9
5. Quick Facts on the Risks of E-cigarettes for Kids, Teens, and Young Adults. Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion. Available from: https://www.cdc.gov-/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html
6. Wold LE, Tarran R, Crotty Alexander LE, Hamburg NM, Kheradmand F, *et al*., American Heart Association Council on Basic Cardiovascular Sciences; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Hypertension; and Stroke Council. Cardiopulmonary consequences of vaping in adolescents: a scientific statement from the American Heart Association. Circ Res. 2022;131(3): e70-e82. doi: 10.1161/RES.0000000000000544
7. Mir M, Rauf I, Goksoy S, Khedr A, Jama AB, Mushtaq H, Jain NK, *et al*. Electronic Cigarettes: Are They Smoking Cessation Aids or Health Hazards? Cureus. 2022;14(5):1-6. doi: 10.7759/cureus.25330

Corresponding Author:
Dr. Aniqa Abdul Rasool
Aga Khan University Hospital,
Karachi, Pakistan.
Email: aniqaasajwani@gmail.com
ORCID iD: 0000-0002-8645-9669