

Vaping Epidemic in Pakistan: A Silently Emerging Public Health Concern

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Vaping products (VPs), otherwise known as electronic cigarettes was first manufactured back in 2003 in China followed by its initiation to market in 2007¹. The VPs devices vaporise a controlled dose nicotine through a heating coil with a liquid chemical reservoir using lithium battery². Recently, use of VPs has grown exponentially especially among teenagers and adolescent population thus making it an emerging public health issue of Pakistan. Considering a less harmful tobacco substitute, there has been a massive rise in vaping prevalence not only in traditional smokers but in not or never smokers³. VPs was initiated and promoted as safe and endorsed as a traditional smoking cessation technique in order to counteract the detrimental effects of smoking, while concurrently act as a mood enhancer and pleasure with a sense of euphoria⁴.

However, the increasing report of serious illnesses and mortality associated with/linked to VPs delineates its toxic effects⁵. The current rising trend of VPs intake and vape shops is a substantial concern to healthcare professionals and policymakers as the harmful effects of vaping outweigh its limited benefits. There is a concerning surge of vaping among Pakistani teenagers and provides insights into its prevalence, health hazards and the influencing factors to the rise of VPs use along with potential solutions to mitigate the rise of vaping.

VPs usage among teenagers and young adults has been rising steadily worldwide. The frequency of high school and middle school students who use VPs is found to be 78% & 48% respectively³. West and Southeast countries such as Bangladesh, Nepal India and Pakistan are experiencing tremendous growth in the vape market size. Pakistan is emerging as a major business hub for VPs especially appealing to adolescents – the primary target market. There was an increase in VPs use rates by approximately 10 times among the teenage population exceeding traditional combustible cigarette intake during the years 2011 and 2018⁵. The popularity of VPs in Pakistan has been on the rise and several researches demonstrate a recent surge in VPs use among teenagers reaching epidemic proportions^{1,5}. Findings from the recently conducted research shows a significant rise in VPs use (49.1%) among Pakistani teens between age group of 16-19 years college going students⁶. Due to these growing trends, public health experts have voiced concerns about the verge of vaping addiction in future generations to its harmful effects.

VPs health hazards are dependent on device type and its characteristics and additive chemicals or other constituents present in aerosol. The flavored liquids in VPs aerosols make it appealing to youngsters and contain harmful chemicals. The studies on its hazards revealed the potentially detrimental effects of additive chemicals in VPs, along with the aerosols that damage DNA, reduce antioxidation defenses, and adversely affect cell viability and proliferation. The cytotoxic component, Acrolein, inhibits enzymes and cross-links DNA. Reactive aldehyde stimulates oxidative stress that contributes to developing oral, respiratory, and cardiovascular disorders. Nicotine and other liquid constituents of VPs affect oral mucosa and periodontium components that disrupt tissue structure and integrity. Cinnamaldehyde, a component of e-liquids in VPs acts as an immunosuppressive agent. Moreover, VPs devices have been linked to physical harm such as fire risk and environmental pollution due to its plastic body and lithium batteries that might cause burns from malfunctioning devices, user tampering or unregulated products. Hence, VPs pose significant public health issues for human and environmental health^{2,7}.

The vaping epidemic and possible outbreak of VPs related adverse health outcomes especially in the teenage population underscore the urgent need for systematic regulation of VPs manufacturing, marketing,

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selling, and distribution. The formulation and application of plausible and effective legislation are anticipated to encounter unique challenges; however, the challenges may vary and depend on the country's economic, social, political, legal, and regulatory context. Globally, backlash against VPs use is gaining more momentum. Although VPs sale and consumption have been banned in numerous countries, the smoking industry continuously finds ways to outflank the policies to flout international efforts³. Despite most of the nations that have resisted the spreading of VPs, but still, these products are market to low-middle-income countries with the influence of the smoking industry⁸. VPs companies and vape shops have massively marketed their products on social media platforms such as Instagram, You-tube, and Facebook because of the increasing popularity of these platforms among teenagers and young adults⁹. Unfortunately, the non-regulatory aggressive marketing and promotion of VPs on social media misperceive vaping as a risk-free activity leading to the increasing risk of vaping initiation among youngsters¹⁰. Further, easy availability and accessibility, peer pressure, and the absence of social stigma are some other factors that contribute to its popularity. This situation creates a perplexing enigma for the entire nation, as it grapples with extensive inflation and to be dealt with this critical problem².

Since efforts are being made across the world to tackle the crisis of vaping by banning the VPs sale in 34 countries. However, 88 countries do not have an age restriction policy for purchasing VPs and 74 countries including Pakistan have no regulatory legislation for these harmful products⁸. Pakistan could swot from its neighbouring countries such as China has banned the flavoured VPs sale meanwhile India implemented a complete prohibition on VPs use in 2019². The commitment from individuals and at the government level will be the definite solution to this pressing issue the change. It can only be achieved by gaining knowledge on various aspects of VPs intake that empower the nation to solve the problem of "to vape or not to vape" using health promotion strategies. The government must make policies to impose a ban on VPs use, launch awareness campaigns, increase tariffs on VPs, and impose age restrictions to reduce accessibility to it. Legislations on social media marketing of VPs may help in the initiation of vaping as well as use these platforms to spread awareness about the health risks of vaping with the delivery of vaping cessation interventions.

Being a member of the medical community, healthcare professionals can educate patients regarding risks associated with VPs use and provide assistance in cessation techniques for already addicted people. Individually and collectively, healthcare professionals must influence policy, regulation, and legislation that impact the health of all Pakistanis. There is a scarcity of research in this area, longitudinal studies have been recommended to see the effects of long-term VPs use.

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