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EMERGING TRENDS AND MISCONCEPTIONS IN E-CIGARETTE USE AMONG UNIVERSITY YOUTH IN LAHORE: A CROSS-SECTIONAL ANALYSIS

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ABSTRACT

Background: E-cigarettes have quickly become a popular alternative to traditional cigarettes, often promoted as a less harmful method of nicotine consumption. Their rising use, especially among young adults has sparked concerns while also fueling an ongoing public health debate. This study aims to determine the prevalence of e-cigarette smoking, assess knowledge and attitudes and identify associated factors.

Method: A cross-sectional survey in Lahore examined e-cigarette use among university students aged 18– 24, recruited via purposive sampling. Data was collected using a self-administered questionnaire, with quantitative data analyzed using descriptive and inferential statistics, and qualitative responses analyzed thematically. Ethical approval was obtained, ensuring participant confidentiality and anonymity.

Results: According to study findings, 41.6% (n=132) of university students (n=320) had tried e- cigarettes, driven by curiosity, social influences, and quitting smoking. Among those who ever used e-cigarettes, a significant portion (around 68%) reported using them for at least two years. Nearly half (around 34%) indicated using them for more than four years.

Conclusion: The survey highlights the widespread use of e-cigarettes among university students, driven by curiosity, social influences, and smoking cessation motives. It underscores the need for more research on the long-term health effects and the role of e-cigarettes in smoking cessation, while emphasizing public support for age restrictions and flavor regulations.

INTRODUCTION

The increasing use of tobacco and nicotine-based products is a significant public health concern. The World Health Organization (WHO) reported that tobacco use is one of the leading causes of preventable deaths worldwide. It is contributing to serious health conditions such as cardiovascular diseases, lung cancer, and chronic respiratory illnesses [1]. The introduction of electronic cigarettes (e-cigarettes) as an alternative to traditional tobacco has sparked debate regarding their potential risks and benefits [2]. E-cigarettes are battery-operated devices that vaporize liquid containing nicotine, flavorings, and other chemicals. They have been marketed as a smoking cessation tool and as a less harmful alternative to conventional cigarettes [3]. However, concerns have been raised about their long- term health effects, especially due to the presence of toxic substances (such as formaldehyde, acetaldehyde, and heavy metals in the aerosolized vapor [4]. The addictive nature of nicotine raises the risk of dependency, particularly among young adults and non-smokers [5]. Several studies have examined public perceptions and behaviors related to e-cigarette use. Some research indicates that users believe e-cigarettes are a safer alternative to traditional smoking and an effective aid for quitting tobacco use [6]. Other studies have identified misconceptions regarding their safety, with many users unaware of the potential health risks associated with long-term exposure to e-cigarette aerosols [7]. Despite increasing research on cigarette use, data on e-cigarettes prevalence and associated risk factors remain limited in certain regions. In Pakistan, the popularity of e-cigarettes has grown, particularly among university students. Yet regulatory measures and awareness campaigns have not kept pace with their fast adoption [8]. This study aims to assess the prevalence of e-cigarette use among university students in Lahore, examining their

motivations, awareness levels, and perceptions of health risks. By analyzing these factors, the research aims to inform policymakers and public health initiatives which are aimed at mitigating potential risks associated with e- cigarette consumption.

Methods:

Study Design: This study employed a cross-sectional survey design to investigate the prevalence, risk factors, and perceptions associated with e-cigarette use among adults. The study aimed to provide a snapshot of e-cigarette consumption patterns and associated health beliefs at a single point in time.

Study Population and Sampling: The target population comprised adults aged 18–35 years residing in Lahore. A convenience sampling technique was used to recruit participants from university campuses, workplaces, and social settings to ensure diverse representation. Participants were eligible if they were currently residing in Lahore and provided informed consent.

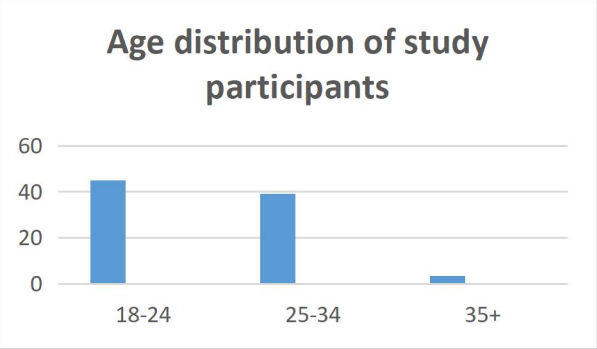
Data Collection: Data was collected using a structured, self-administered questionnaire designed to capture demographic characteristics, smoking and vaping behaviors, motivations for e-cigarette use, perceptions of harm, and awareness of regulatory policies. The questionnaire was distributed electronically and in person between September and December 2024.

Questionnaire Development and Validation: The questionnaire was adapted from validated instruments used in prior research on e-cigarette use. It underwent expert review and pilot testing was conducted with a sample of 30 participants to assess clarity, reliability, and validity. The final version included both quantitative and qualitative sections to gather numerical data and open-ended responses regarding user experiences and attitudes.

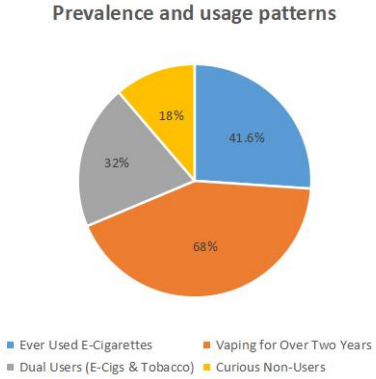
Ethical Considerations: Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Health Services Academy, Islamabad. All participants provided informed consent, and confidentiality was maintained throughout the study. No personally identifiable information was collected, and data was stored securely with restricted access.

Statistical Analysis: The collected data was analyzed using SPSS version 26. Descriptive statistics (frequencies and percentages) were used to summarize participant characteristics and prevalence rates. Chi- square tests and logistic regression analyses were conducted to examine associations between e-cigarette use and demographic or behavioral variables. Thematic analysis was applied to qualitative responses to identify key themes regarding perceptions and motivations for e- cigarette use.

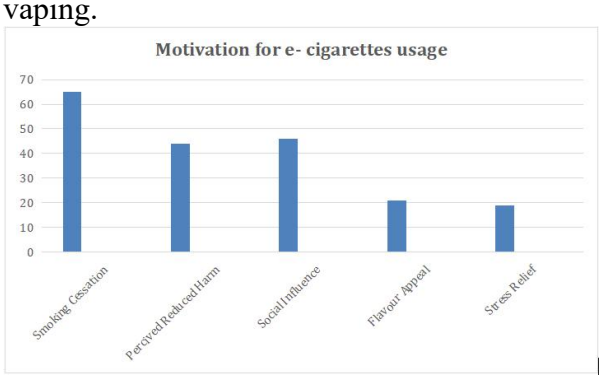
Results:



The majority of participants were young adults aged 18–24 and 25–34, making up most of the sample. Only a small fraction was 35 or older.



A significant 41.6% of participants had tried e-cigarettes, with 68% reporting use for over two years. Additionally, 32% were dual users, while 18% were curious but had never tried vaping.



There are multiple motivating factors fore-cigarette usage, with smoking cessation being the most common among them.

Knowledge levels regarding e-cigarettes vs traditional cigarettes	Percentage (%)
More knowledgeable	30.3
Less knowledgeable	18.0
Equally knowledgeable	17.3
Less knowledgeable	14.8

Awareness levels vary, with many users feeling informed, but a significant portion remains uncertain or less knowledgeable.

Discussion:

Worldwide, tobacco smoking remains a leading cause of preventable morbidity and mortality. Recent estimates by the World Health Organization reveal that tobacco use contributes substantially to cardiovascular diseases, lung cancer, and chronic respiratory illnesses [9]. In Pakistan, despite ongoing tobacco control efforts, the prevalence of smoking remains high [10]. The emergence of e-cigarettes has introduced a new challenge for public health. Our study among university students in Lahore revealed a significant prevalence of e-cigarette use (41.6%), with 68% of users reporting long-term (over two years) usage. These findings align with previous reports suggesting that e-cigarette use is very common among young adults [11]. This behavior is driven primarily by motivations such as smoking cessation and perceived reduced harm [12, 13]. Smoking cessation accounted for 64.7% of our respondents' primary reason for using e-cigarettes. This large number supports the notion that these devices are viewed as a viable alternative to conventional tobacco products. However, despite the perceived benefits, concerns remain regarding the safety of e-cigarettes. The study results show that while a considerable number of users believe that e-cigarettes can help in quitting smoking (45%), a significant proportion (52%) remain unaware of the presence of harmful chemicals in the vapor. This aligns with earlier research that has highlighted misconceptions about the safety of e-cigarettes, despite evidence of toxic substances (formaldehyde, acetaldehyde, and heavy metals) in the aerosols. Nicotine's strong addictive potential indicates that prolonged use of e-cigarettes may carry significant health hazards. The research also revealed that 32% of participants simultaneously use both e-cigarettes and traditional tobacco products. This trend of using both products together, also seen in various populations, could reduce the expected benefits of fully transitioning from traditional cigarettes to e-cigarettes. The persistence of dual use raises important questions regarding their role in tobacco cessation and overall public health impact [15]. In summary, the study demonstrates that e-cigarette usage among young adults in Lahore is substantial and influenced by

factors such as the desire for smoking cessation, social influence, and the belief in reduced harm. However, the presence of significant knowledge gaps and the prevalence of dual usage highlight the need for targeted public health interventions. To mitigate the harms linked to e-cigarette usage, there is a critical need for awareness initiatives and enhanced policy enforcement.

Conclusion:

The findings indicate widespread use of e-cigarettes among university students in Lahore, where 41.6% reported having tried them, and many continued using them alongside conventional smoking. The data indicate that the primary drivers for e-cigarette adoption are the desire for smoking cessation and the perception of reduced harm, although many users remain unaware of the potential risks associated with toxic chemical exposure. These findings underscore

The results highlight the pressing requirement for focused health campaigns to correct misunderstandings and for the application of tighter regulations to reduce possible chronic health impacts. The study also highlights the importance of integrating-cigarette education into academic and community settings. By providing scientifically accurate information, health professionals and educators can empower young adults to make informed decisions regarding nicotine consumption. Considering the dual-use pattern observed, future interventions should address not only the transition from traditional smoking but also the persistent risks of combined use. Overall, the evidence from this research provides a foundation for policymakers to develop robust strategies that balance harm reduction with the prevention of nicotine addiction.

Implications for Public Health

- The significant support among respondents for age restrictions and advertising regulations suggests that policymakers should consider tighter controls on e-cigarette marketing and sales.

The prevalent misconceptions about e-cigarette safety call for comprehensive educational campaigns aimed at young adults, particularly in academic institutions.

The notable incidence of dual use implies that cessation programs must address both e-cigarette and conventional tobacco use to effectively reduce overall nicotine dependence.

Limitations and Future Directions

Study Limitations: As a cross-sectional survey with a convenience sample, the findings may not be fully generalizable to the broader population. Future studies employing randomized sampling and larger sample sizes would strengthen the evidence base

Research Recommendations: Longitudinal research is needed to monitor the long-term health effects of e-cigarette use and to evaluate the impact of regulatory changes over time. Additional research into the psychological and behavioral reasons for dual usage may help design more precise and effective intervention efforts.

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