Understanding University Students' Perceptions And Intentions Regarding Electronic Cigarette Use: An Educational Imperative

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ABSTRACT

The escalating prevalence of electronic cigarette (e-cigarette) use among young adults, particularly university students, presents a significant public health challenge. Despite increasing awareness, misconceptions about the safety and addictive potential of e-cigarettes persist. This study aims to assess the knowledge, attitudes, and cessation intentions concerning e-cigarette use among university students, focusing on understanding the factors influencing their behavior to inform targeted educational interventions. A comprehensive understanding of these aspects is crucial for developing effective public health strategies that address the unique challenges posed by e-cigarettes, often marketed under various brand names and flavors, including those colloquially known as "HiPaks" or similar appealing identifiers. This research will contribute to a robust evidence base for designing educational programs that promote informed decision-making and support cessation efforts among this vulnerable population.

KEYWORDS: electronic cigarette use, university students, student perceptions, smoking behavior, e-cigarette awareness, health education, tobacco alternatives, vaping intentions, youth smoking trends, public health education, e-cigarette attitudes, educational strategies, smoking prevention, nicotine use among students.

INTRODUCTION

The emergence and rapid adoption of electronic cigarettes have dramatically reshaped the landscape of tobacco and nicotine consumption globally, especially among young adults and university students [1, 2, 16]. Originally promoted as a less harmful alternative to traditional cigarettes or as a cessation aid, e-cigarettes, also known as "vapes" or Electronic Nicotine Delivery Systems (ENDS), have become a significant concern due to their increasing popularity and the potential health risks associated with their use [1, 14, 23]. While some argue for their harm reduction potential for adult smokers who cannot quit nicotine entirely [7], the evidence regarding their long-term effects and their role in promoting nicotine addiction, particularly among non-smokers, remains a subject of intense scientific scrutiny [3, 10].

The appeal of e-cigarettes to young people is multifaceted, often attributed to their diverse flavors, sleek designs, perceived lower health risks compared to conventional cigarettes, and widespread social media marketing [1, 6, 17]. This perceived lower risk is often a significant misconception, as e-cigarettes still deliver nicotine, a highly addictive substance, and expose users to various potentially harmful chemicals [3, 7, 10]. Studies have highlighted a critical gap in knowledge regarding the true health implications of e-cigarette use, even among healthcare workers [3]. This knowledge deficit extends to the general public and, notably, to university students, who are at a critical developmental stage characterized by exploration and susceptibility to peer influence and marketing strategies [1, 19, 20].

The Global Adult Tobacco Survey (GATS) provides a framework for understanding tobacco product use, including emerging products like e-cigarettes, and underscores the importance of comprehensive surveillance [8]. Research has shown a clear association between the use of e-cigarettes and subsequent initiation of combustible cigarette use in young people, further complicating public health efforts [6]. Moreover, specific "ice" flavor elements in e-cigarette imagery have been found to influence liking and intention to use among youth at risk [17].

Understanding the knowledge, attitudes, and cessation intentions of university students who use e-cigarettes is

paramount for developing effective public health interventions. This includes addressing not only the direct health consequences but also the socio-economic burden associated with nicotine addiction and related health issues [23]. Previous studies have explored e-cigarette use among college students, identifying various reasons for their adoption, including stress reduction, social reasons, and curiosity [5, 16]. However, there is a continued need to specifically assess the knowledge gaps, prevalent attitudes, and willingness to quit among this demographic to inform tailored educational programs [19, 24]. The specific terminology used by students for e-cigarettes, such as "HiPaks," further necessitates localized understanding to enhance the relevance and effectiveness of interventions.

This study aims to fill these gaps by comprehensively assessing the knowledge, attitudes, and cessation intentions regarding e-cigarette use among university students, including those who refer to certain types as "HiPaks." The findings will serve as a foundational basis for designing targeted educational strategies and intervention programs aimed at promoting informed choices and supporting cessation among this vulnerable population.

METHODS

This study will employ a cross-sectional, descriptive research design to assess knowledge, attitudes, and cessation intentions regarding e-cigarette use among university students.

Participants and Setting: The study population will comprise undergraduate and postgraduate students enrolled in various faculties and departments at a selected university. A stratified random sampling technique will be utilized to ensure representation across different academic levels and disciplines. Eligibility criteria will include being currently enrolled at the university and aged 18 years or older. Students who do not provide informed consent will be excluded.

Data Collection Instrument: A self-administered questionnaire will be developed based on existing literature and validated instruments, such as adapted components from the Global Adult Tobacco Survey (GATS) [8] and questions used in similar studies assessing e-cigarette knowledge and attitudes among young adults [19, 20]. The questionnaire will be structured into several sections:

1. **Socio-demographic Information:** Age, gender, academic year, faculty, and living arrangements.
2. **E-cigarette Use History:** Ever tried e-cigarettes, current e-cigarette use (frequency, duration), types of e-cigarettes used (including any known as "HiPaks"), and reasons for initiation (e.g., curiosity, peer influence, flavor, perceived harm reduction, stress management) [5, 16, 25].
3. **Knowledge of E-cigarettes:** Questions will assess students' understanding of e-cigarette components, nicotine content, health risks (e.g., cardiovascular effects, respiratory issues, addiction potential) [7, 18], regulatory status, and the difference between e-cigarettes and traditional cigarettes. Misconceptions regarding e-cigarettes, similar to those identified among healthcare workers, will also be explored [3, 10, 24].
4. **Attitudes towards E-cigarettes:** This section will explore students' perceptions of e-cigarettes, including their perceived safety, social acceptability, effectiveness as a smoking cessation aid, and influence of marketing and social media [1, 2, 17].
5. **Cessation Intentions and Behaviors:** Questions will address students' desire to quit e-cigarettes, previous attempts to quit, methods used for cessation, and perceived barriers to quitting [10, 24].

The questionnaire will be pilot-tested on a small sample of university students (n=20-30) to assess clarity, comprehensibility, and reliability, and necessary revisions will be made.

Data Collection Procedure: Ethical approval will be obtained from the university's Institutional Review Board. Participants will be approached in common areas of the university (e.g., libraries, student unions, cafeterias) or through online platforms if a digital survey is implemented. Informed consent will be obtained from all participants before data collection. Anonymity and confidentiality will be ensured throughout the study. Data collection is anticipated to take place over a period of 4-6 weeks.

Data Analysis: Descriptive statistics (frequencies, percentages, means, standard deviations) will be used to summarize the socio-demographic characteristics of the participants and to describe their e-cigarette use patterns, knowledge levels, attitudes, and cessation intentions. Inferential statistics, such as chi-square tests and independent t-tests, will be employed to examine associations between socio-demographic variables, e-cigarette use, knowledge, attitudes, and cessation intentions. Regression analysis may be used to identify predictors of cessation intentions. Statistical significance will be set at $p<0.05$. Data analysis will be performed using appropriate statistical software (e.g., SPSS or R, guided by principles for meta-analysis if applicable to synthesize findings with existing literature) [4]. Qualitative data from open-ended questions, if included in the survey, will be analyzed using thematic analysis to identify recurring themes related to e-cigarette perceptions and experiences [5].

RESULTS

The findings of this study are expected to provide a comprehensive overview of university students' engagement with e-cigarettes, their understanding of

associated risks, and their willingness to consider cessation. While specific results are pending data collection and analysis, based on existing literature, we anticipate several key findings:

Knowledge of E-cigarettes:

- A significant proportion of university students are likely to exhibit misconceptions about the safety of e-cigarettes, often perceiving them as harmless or significantly less harmful than traditional cigarettes [3, 10, 24].
- Knowledge about the addictive nature of nicotine delivered by e-cigarettes may vary, with some students underestimating its addictive potential [18].
- Awareness of specific health risks, such as cardiovascular implications [18] and respiratory issues, may be limited or inaccurate.
- Students may be unaware of the regulatory landscape surrounding e-cigarettes and the inconsistencies in product safety and quality [7].

Attitudes towards E-cigarettes:

- E-cigarettes are likely to be viewed by a considerable segment of students as socially acceptable, especially within peer groups, influenced by marketing and social media [1, 2].
- A proportion of students may hold positive attitudes towards e-cigarettes as a means of stress reduction or a recreational activity [5, 16].
- Flavors, including those potentially associated with terms like "HiPaks," are expected to play a significant role in influencing positive attitudes and initial uptake [17].
- Some students may maintain the belief that e-cigarettes are effective tools for traditional cigarette cessation, despite conflicting evidence, especially for those who have never smoked conventional cigarettes [6].

Cessation Intentions:

- While some e-cigarette users may express a desire to quit, cessation intentions may be influenced by the perceived difficulty of quitting, lack of awareness of cessation resources, and social influences [10, 24].
- Factors such as the duration and frequency of e-cigarette use, as well as the presence of co-occurring mental health challenges like stress, anxiety, and depression, may be associated with varying levels of cessation intentions [16].
- Previous attempts to quit, if any, and the methods employed, will shed light on the challenges faced by students in achieving cessation.

- Messaging focused on cessation and knowledge-building is crucial and has been shown to be associated with stronger cessation intentions among youth and young adults [24].

E-cigarette Use Patterns:

- Prevalence of e-cigarette use among university students is expected to be considerable, consistent with global trends [1, 2, 22].
- Reasons for initiation are likely to be diverse, including curiosity, social norms, flavor appeal, and perceived harm reduction [5, 16, 25].
- The transition from e-cigarette use to traditional cigarette smoking may be observed in a subset of the population [6, 15].

These anticipated results, drawn from a synthesis of current research, highlight the critical need for robust data from the study to provide specific insights into the local context of university students and their engagement with e-cigarettes, including any regional terminologies like "HiPaks."

DISCUSSION

The anticipated findings from this study will underscore the urgent need for tailored educational interventions targeting university students regarding e-cigarette use. The expected prevalence of misconceptions about e-cigarette safety and addictive potential among this population aligns with broader public health concerns and previous research, even among healthcare professionals [3, 10, 24]. This highlights a crucial gap in current public health messaging and the need for more comprehensive and accessible information.

The significant influence of social media and attractive marketing on e-cigarette initiation and sustained use among young adults, as supported by existing literature, will likely be reflected in students' attitudes [1, 2, 17]. This underscores the necessity of counter-marketing campaigns and educational initiatives that address the allure of e-cigarette advertising and the impact of peer influence. The use of appealing flavors, including those potentially referred to as "HiPaks," is a well-documented driver of youth uptake [17, 25], and addressing this aspect in educational programs is critical.

The varying levels of cessation intentions among students are expected to be a key finding, reflecting the complex interplay of nicotine addiction, perceived barriers to quitting, and the availability of cessation support [10, 24]. Understanding the specific reasons for cessation attempts and the challenges faced by students will be invaluable for developing effective cessation programs. It is crucial to recognize that while some individuals may view e-cigarettes as a cessation tool for traditional smoking, their use by non-smokers or as a gateway to conventional tobacco products remains a significant concern [6, 15]. The association

between vaping reasons and mental health indicators such as stress, anxiety, and depression also suggests that holistic approaches to cessation support may be necessary, addressing underlying psychological factors [16].

This study's findings will provide a local context to the global phenomenon of e-cigarette use among young adults. By specifically assessing knowledge, attitudes, and cessation intentions among university students, the research will offer actionable insights for designing targeted educational programs. These programs should move beyond simply stating risks and instead focus on building comprehensive knowledge, challenging misconceptions, and providing practical support for cessation. Such programs could integrate information on the long-term health consequences, the addictive nature of nicotine, the manipulative tactics of e-cigarette marketing, and available cessation resources [10, 14, 24]. Furthermore, incorporating peer-led education and utilizing platforms relevant to university students, including digital media, could enhance the reach and effectiveness of these interventions [1].

The economic burden associated with smoking and related health issues, as highlighted by studies on healthcare costs and lost productivity, further emphasizes the long-term societal implications of e-cigarette use if it leads to sustained nicotine addiction and subsequent health problems [23]. Therefore, investing in preventative education and cessation support for university students is not only a public health imperative but also an economic one.

CONCLUSION

This study aims to provide crucial data on the knowledge, attitudes, and cessation intentions related to e-cigarette use among university students. The anticipated findings will underscore the pervasive misconceptions and the significant influence of various factors on e-cigarette adoption and continued use within this demographic. The results will serve as a robust basis for developing and implementing evidence-based educational interventions specifically tailored to university students. These interventions are vital for promoting informed decision-making, debunking myths surrounding e-cigarettes, supporting cessation efforts, and ultimately safeguarding the health and well-being of the next generation. Addressing the challenge of e-cigarette use requires a multi-pronged approach that integrates comprehensive education, effective cessation support, and public health policies that mitigate the appeal and accessibility of these products to young adults.

REFERENCES

1. Adekeye, O. T., Boltz, M., Jao, Y. L., Branstetter, S., & Exten, C. (2025). Vaping in the digital age: How social media influences adolescent attitudes and beliefs about e-cigarette use. *Journal of Child & Adolescent Substance Use,* *30*(1), 13–26. https://doi.org/10.1080/1067828X.2024.2439599

2. Alaboodi, T., Al Sayari, T. A., Kofi, M., Almadi, M. K., Sabr, M. S., & Sabr, M. (2025). Epidemiology of using electronic cigarettes in Saudi Arabia: A systematic review. *Cureus,* *17*(3). https://doi.org/10.7759/cureus.79870

3. Alkhonain, I. M., Alqahtani, M., Alnamlah, L. A., Kofi, M., & Alnamlah, L. (2025). Misconceptions about e-cigarettes among healthcare workers at Primary Health Care Centers in Riyadh, Saudi Arabia. *Cureus,* *17*(1). https://doi.org/10.7759/cureus.77051

4. Ariel de Lima, D., Helito, C. P., Lima, L. L. D., Clazzer, R., Gonçalves, R. K., & Camargo, O. P. D. (2022). How to perform a meta-analysis: A practical step-by-step guide using R software and RStudio. *Acta Ortopedica Brasileira,* *30*(3). https://doi.org/10.1590/1413-785220223003e248775

5. Clendennen, S. L., Rangwala, S., Sumbe, A., Case, K. R., Wilkinson, A. V., Loukas, A., & Harrell, M. B. (2021). Understanding college students' experiences using e-cigarettes and marijuana through qualitative interviews. *Journal of American College Health, 71*(9), 2848–2858. https://doi.org/10.1080/07448481.2021.1998073

6. Conde, M., Tudor, K., Begh, R., Nolan, R., Zhu, S., Kale, D., ... & Hartmann-Boyce, J. (2024). Electronic cigarettes and subsequent use of cigarettes in young people: An evidence and gap map. *Addiction, 119*(10), 1698-1708. https://doi.org/10.1111/add.16583

7. Farsalinos, K. E., & Polosa, R. (2014). Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: A systematic review. *Therapeutic Advances in Drug Safety,* *5*(2), 67–86. https://doi.org/10.1177/2042098614524430

8. Global Adult Tobacco Survey (GATS). (2020, September). *Global Adult Tobacco Survey (GATS) Comprehensive Standard Protocol.* Retrieved from: https://cdn.who.int/media/docs/default-source/ncds/ncdsurveillance/gats/06_gats_corequestionnairewithoptionalquestions.pdf?sfvrsn=3b5ca226_15. Accessed on 19th January, 2025.

9. Guatibonza-García, V., Gnecco-González, S., Pérez-Londoño, A., Betancourt-Villamizar, C., & Mendivil, C. O. (2025). A descriptive study of smoking, socioeconomic position, and health-related behaviors in urban Colombia. *Discover Public Health,* *22*(1). https://doi.org/10.1186/s12982-025-00405-z

10. Halpern-Felsher, B. (2024). Supporting adolescents' desire to quit e-cigarettes. *JAMA, 332*(9), 711-712. http://doi.org/10.1001/jama.2024.13142

11. Jackson, S. E., Tattan-Birch, H., East, K., Cox, S., Shahab, L., & Brown, J. (2024). Trends in harm perceptions of e-cigarettes vs cigarettes among adults who smoke in England, 2014-2023. *JAMA Network Open, 7*(2). https://doi.org/10.1001/jamanetworkopen.2024.0582

12. Kajan, L., Puljak, L., Matić, I., Marendić, M., Zoranić, S., Ivanišević, K., Majstorović, D., Puharić, Z., Skitarelić, N., Neuberg, M., Barać, I., Čukljek, S., & Čivljak, M. (2025). Usage, knowledge and attitudes towards electronic cigarettes use among nursing students in Croatia: A cross-sectional study. *BMC Nursing, 24*(1). https://doi.org/10.1186/s12912-025-02708-7

13. Kaondera-Shava, M., Salibi, G., & Tzenios, N. (2024). Impact of electronic cigarettes on public health. *Special Journal of the Medical Academy and Other Life Sciences, 2*(1). https://doi.org/10.58676/sjmas.v2i1.49

14. Kinouani, S., Da Cruz, H., Simon, M., Abraham, M., Perret, G., Langlois, E., & Tzourio, C. (2025). The transition from cigarette smoking to the exclusive or partial use of e-cigarettes: A multi-stage mixed methods study among French university students. *Addictive Behaviors, 161*. https://doi.org/10.1016/j.addbeh.2024.108205

15. Kinouani, S., Roux, F., Questel, B., Abraham, M., & Tzourio, C. (2025). Reasons for using electronic cigarettes among young adults aged 18–30: A systematic review. *EXCLI Journal, 24*, 204-237. https://doi.org/10.17179/excli2024_8085

16. Lee, D. N., Kim, H. M., & Stevens, E. M. (2025). Association of vaping reasons with stress, anxiety, and depression among young adults who currently vape. *Substance Use & Misuse, 60*(2), 188-194. https://doi.org/10.1080/10826084.2024.2422949

17. Li, W., Davis, D. R., Buta, E., Gueorguieva, R., Khan, N., Green, B. G., ... & Krishnan-Sarin, S. (2025). "Ice" Flavor elements in e-cigarette images: influence on liking and intention to use among youth who are at risk of e-cigarette use. *Drug and Alcohol Dependence*. https://doi.org/10.1016/j.drugalcdep.2025.112600

18. MacDonald, A., & Middlekauff, H. R. (2019). Electronic cigarettes and cardiovascular health: what do we know so far. *Vascular Health and Risk Management, 15*, 159–174. https://doi.org/10.2147/VHRM.S175970

19. Palmes, M., Trajera, S. M., & Sajnani, A. K. (2021). Knowledge and attitude related to use of electronic cigarettes among undergraduate nursing students in an urban university setting in the Philippines. *Journal of Preventive Medicine and Hygiene, 62*(3), E770–E775. https://doi.org/10.15167/2421-4248/jpmh2021.62.3.1709

20. Resano, J. E. P., Guce, M. N. D. A., Manicio, Z. Z., Serrano, S. M. A., Sicat, S. P. A., Moreno, P. J. M., ... & Baja, E. S. (2022). Prevalence and risk factors of smoking and vaping among Nursing Students in a Private University in Manila, Philippines. *Philippine Journal of Science, 151*(1). https://doi.org/10.56899/151.01.31

21. Vaidya, A., Tavkar, K., Parashar, K., Menon, M., Maheshwari, M., Pandey, S., & Raiturkar, V. P. (2024). Electronic cigarettes behavior pattern and health locus of control among young adults. *Journal of Emerging Technologies and Innovative Research, 11*(3). Retrieved from https://www.jetir.org/view?paper=JETIR2403466. Accessed on 24th December 2024.

22. Villanueva-Blasco, V. J., Belda-Ferri, L., & Vázquez-Martínez, A. (2025). A systematic review on risk factors and reasons for e-cigarette use in adolescents. *Tobacco Induced Diseases, 23*(January), 1–25. https://doi.org/10.18332/tid/196679

23. Vynckier, P., Schmidt, M., Nayani, S., Guariguata, L., Devleesschauwer, B., & Verhaeghe, N. (2025). The economic burden of smoking in Belgium: Incremental healthcare costs and lost productivity. *European Journal of Public Health, 35*(1), 108–113. https://doi.org/10.1093/eurpub/ckae211

24. Yu, L. Q., Do, E. K., Minter, T., Koris, K., Khatib, B., Jacobs, M. A., Graham, A. L., & Hair, E. C. (2025). Cessation and knowledge-building messaging are associated with e-cigarette cessation intentions among youth and young adults in the USA. *Tobacco control, tc-2024-058821*. Advance Online Publication. https://doi.org/10.1136/tc-2024-058821

25. Wibowo, R., Weinmann, T., Nowak, D., & Prabandari, Y. S. (2025). Exploring e-cigarette use among Indonesian youth: Prevalence, determinants and policy implications. *Journal of Community Health, 1-11*. https://doi.org/10.1007/s10900-025-01442-0