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Use of Nicotine Products and Awareness among The Young Generation

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ABSTRACT

Background With the increasing prevalence of the use of nicotine products in educational institutions by the young generation, this research investigates the prevalence and awareness of nicotine products at Shifa Tameer-e-Millat University in Islamabad, Pakistan. It explores demographics, consumption patterns, and perceptions related to nicotine products.

Methods This study was conducted at Shifa Tameer-e-Millat University, Islamabad, from March 2022 to August 2023. Individuals aged 18 or older of both genders, including students from the university and Shifa Medical College, as well as healthcare employees and teachers who had consented to participate and had a history of nicotine product usage, were included.

Results The sample size was 320, with most being students (83.0%) with a mean age of 22.31 years, predominantly using cigarettes (57.5%), followed by e-cigarettes (23.4%). Participants reported exposure mainly to university (41%) and college (37%). Usage frequency varied, with 34.7% using nicotine products once daily, 32.5% 2-3 times daily, 20.6% 4-6 times daily, and 12.2% more than seven times daily. Peer pressure had a moderate influence (mean rating of 5.96), and a significant association was found between gender and nicotine product usage ($p=0.003$). Preferences favoured modern nicotine products (n: 233) over conventional ones (n: 87), but no linear trend was observed. Health impact perception was linked to willingness to quit; 167 believed their health was affected and were willing to quit, while 48 hesitated, and 79 were indecisive ($p=0.009$), with a linear trend ($p<0.05$).

Conclusion This study illuminated nicotine usage patterns, thus informing public health efforts to reduce consumption.

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INTRODUCTION

Since the mid-2000s, due to the availability of various nicotine products, conventional tobacco purchases and usage have shifted to alternate products, raising concerns due to the increase in public interest.[1] Among the alternative products, e-cigarettes, nicotine patches, and nicotine gums are found to be the most widely used. Electronic cigarettes are novel battery-operated handheld devices designed to deliver smokeless doses of nicotine. In contrast, a nicotine patch is a patch impregnated with nicotine that is worn on the skin. These are designed to stimulate the same sensory experience of smoking without the factor of smoke.[2]

Nowadays, a wide variety of nicotine brands are easily accessible in retail and online shops. Nicotine products are highly advertised in markets, while safety and long-term health are still vague based on the present scientific evidence. Due to large-scale marketing, these nicotine products gained widespread pervasiveness among teenagers and young adults.[3] Indeed, according to recent reports from the USA, between 2012 and 2019, there was a marked decline in conventional tobacco smoking and a surge in the usage of e-cigarettes among the young age groups. 4.3% of middle school students repeatedly use modern nicotine products, and 11.3% of high school students reportedly used nicotine products in 2016. Furthermore, data from 24,658 individuals in the 2012 Youth Tobacco Survey reported that almost 1/3rd of adolescents in the United States consider e-cigarettes as less harmful than conventional tobacco.[4,5]

Most e-cigarettes consist of four different components: a cartridge, reservoir, or pod that holds a liquid solution (e-liquid or e-juice) containing varying amounts of nicotine, flavourings, and other chemicals; a heating element (atomiser); a power source (usually a battery) and a mouthpiece that the person uses to inhale.[6]

Pakistan has witnessed a steady increase in the use of Tobacco Harm Reduction (THR) products such as e-cigarettes and nicotine pouches over the last five years. Variously called Electronic Nicotine Delivery Systems (ENDS) or Safer Nicotine Delivery Systems (SNDS), these harm reduction products (HRPs) are used in a regulatory vacuum. However, e-cigarettes and other HRPs are legally imported as consumer goods, with tax duties imposed on them. Currently, the data on tobacco use in Pakistan is old, if not outdated.[7]

Diverse characteristics influence the vulnerability of young age groups to nicotine products. These can be intrapersonal, e.g., an adolescent's age, interpersonal, e.g., conflict with family and peers, and depend on community structure and laws. An analysis of modern nicotine products retail websites, marketing, and promotional campaigns demonstrates frequent appeals to young age groups as they feature social media influencers, famous cartoonists, and celebrities. This is shown as a symbol of fashion trends, maturity, style, and sexual appeal. It is symbolised as a way of enhancing social activity.[8]

E-cigarette vapor contains many of the known harmful toxins of traditional cigarettes such as formaldehyde, cadmium, and lead, even though usually at a reduced percentage.[9] However, short and long-term health implications on e-cigarette users remain foggy. E-cigarettes and other nicotine product marketing are of particular concern because they create the illusion that e-cigarettes are safer and healthier. Their safety and their potential role in smoking cessation is still a matter of ongoing debate.[10]

This research is imperative to illustrate the association between the use of nicotine products and gender, along with different factors that influence the use of nicotine products in the young generation. The study will further explore the health awareness among the young generation related to nicotine products. The research will also explore the willingness factor among the young generation to stop using nicotine products in terms of their health and safety. This study will provide insight into the trending use of nicotine products, and their awareness of such products will help resolve complications related to them in the future.

MATERIAL AND METHODS

The research was conducted in Shifa Tameer-e-Millat University Islamabad between March 2022 and August 2023.

Participants

The inclusion criteria were age 18 years and above for both genders. Participants are students of Shifa Tameer-e-Millat University and Shifa Medical Faculty and healthcare workers or teachers. Participants gave consent and used nicotine products.

Recruitment and randomization

The eligible participants for the study were approached with proper informed consent. Patients were recruited through a snowball sampling technique with online surveys and written questionnaires. A

target population was defined to uphold randomisation, and each eligible participant was given a unique ID.

Sample size calculation

Yamane's formula, n=N/(1+N(e)2), was used to calculate the sample size. The total population included students from different faculties and healthcare workers. The total population was estimated to be 1500. Using the above formula, a confidence interval (CI) of 95% and a margin of error of 5% were kept. It was calculated to be 317, rounding off to 320.

Statistical analysis

Data were entered into SPSS (Version 26, IBM© SPSS© Statistics) by the principal investigator. Descriptive and frequency studies were done to assess different variables. The chi-square test was used for categorical datasets.

Ethical aspects

Participants who wished to withdraw were able to do so without any requirement to give a reason.

RESULTS

A total of 320 participants were enrolled in the study. The mean age of the participants is 22.31±2.028 years *(Figure 1)*. The median age was 22 years. The age of participants ranged from a minimum of 18 years to a maximum of 27 years. The 25th percentile (Q1) was found to be 21. The 50th percentile (Q2) was 22 while the 75th percentile (Q3) was 23.75. The gender distribution of the valid 320 participants revealed that 74.4% of the participants identify as male while the remaining 25.6% identify as females.

Out of the 320 participants, the majority of the individuals were students, accounting for approximately 83.0% of the participants. Forty-six of the individuals were healthcare workers (about 14.2%). Three individuals were teachers (0.9%), while another 3 participants (0.9%) falled into the others category. The majority of the participants in the research study were pursuing undergraduate education, about 254 (79.4%), and graduate-level participants account for 58 (18.1%) of the valid participants. Post-graduate participants represented a small fraction of 8 (2.5%) of the sample *(Figure 2)*.

The analysis of the used nicotine products among the participants provided captivating insight into the widely used nicotine products. The most commonly used product by the participants was reported to be cigarettes, accounting for 184 individuals (57.5% of the valid participants). E-cigarettes were the second most common choice, with 75 individuals (23.4% of participants using them). 53 participants (approximately 16.6%) reported using the nicotine patches/gums. A smaller group of 8 participants (approximately 2.5%) reported using cigars *(Table 1)*.

The data analysis indicated that the majority of the participants were exposed to nicotine products in university, about 130 participants (approximately). Another substantial group of 118 participants (about 36.9%) had exposure to nicotinic products in college, followed by 57 participants (17.8%) who reported the place as school. In comparison, a smaller group of 15

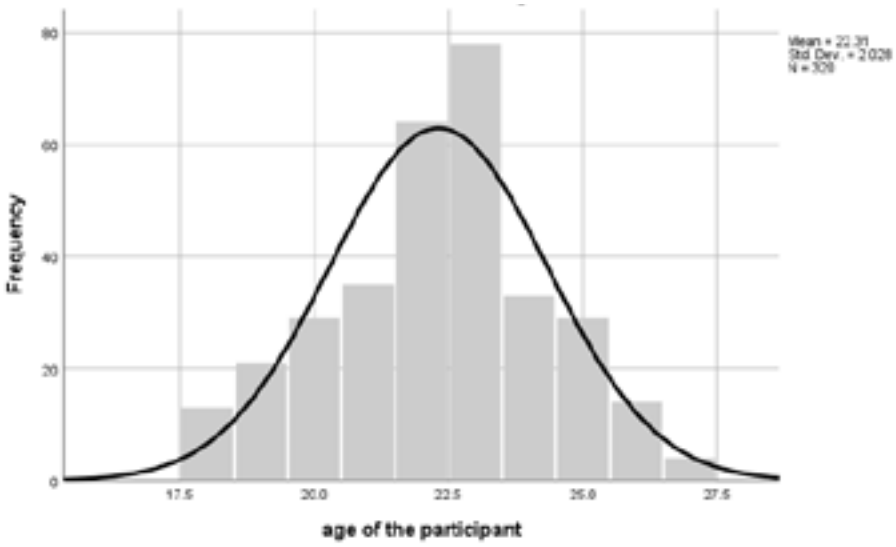

Figure 1. Histogram of the age of the participants

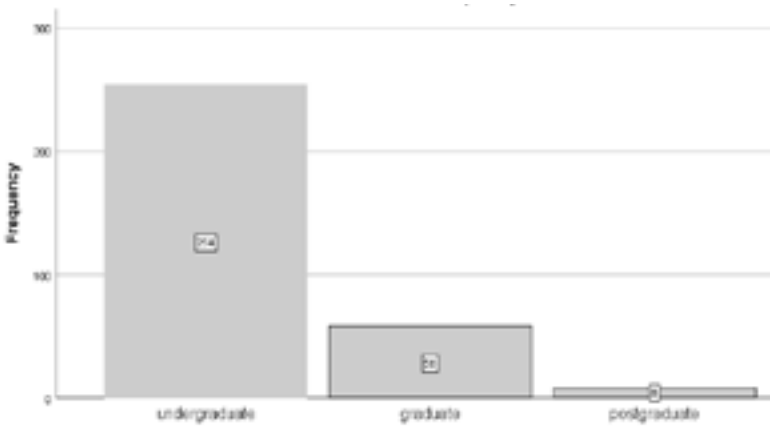

Figure 2. Education level of the participants

participants (4.7%) said an "other" place *(Figure 3).*

Participants' daily nicotine use frequency was evaluated. One hundred eleven participants (34.7%) reported using one time a day. The second most common frequency was 2-3 times per day registered by 104 participants (32.5%); 66 participants (20.6%) reported using 4-6 times a day while a small group of 39 participants (12.2%) reported using seven or more than seven times a day.

The analysis of the influence of peer pressure on the participants to use nicotine products on a scale of 1-10 provided us with the following results. The mean value for this variable was 5.96. The median value was 6.00 *(Figure 4),* while the mode was 5, indicating many participants rated the influence as moderate. The skewness value was –0.261, suggesting more individuals rated the influence lower than the mean. The kurtosis value was -0.629, suggesting that the responses were relatively spread out and not heavily clustered around the mean. The data analysis provided insight into the frequency of nicotine usage.

The data analysis using Pearson Chi-Square suggested a significant association between gender and usage of nicotine products (χ^2=14.320, df=3, p=0.003). The analysis provided strong evidence that there was a meaningful connection between gender and the reported usage of nicotine products by the participants in the present times *(Table 2).*

The chi-square test was used to assess the association between "at what place you were exposed to the nicotine product" and "how frequently the participant used the nicotine product". The Pearson Chi-Square result exhibited the following values (χ^2=18.208, df=9, p value=0.033) while the Likelihood ratio showed the values (χ^2=17.276, df=9, p value=0.045). The Pearson Chi-Square and Likelihood Ratio suggested a significant association between the two variables, as the p-value was less than 0.05. The linear-by-linear association (χ^2=2.116, df=1, p=0.146) test did not show a statistically significant linear trend *(Table 3).*

On data analysis between the variables "At what place you were exposed the first time" and "Will you prefer modern nicotine products over conventional". In total, 233 individuals preferred modern products over cigarettes. Eighty-seven individuals did not prefer modern products over conventional nicotine products. It appeared that a higher number of participants from all places preferred modern nicotine products over conventional nicotine products *(Figure 5).*

The Chi-Square test showed values as (χ^2=12.852, df=3, p=0.005), showing a statistically significant association between the two variables (*Table 3*). Linear by linear association (χ^2=2.356, df=1, p=0.125 not significant) showed no linear trend between the two variables.

The research findings based on the responses of

Table 1. Distribution of nicotine products currently used by the participant

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Cigarette	184	57.5	57.5	57.5
	Cigar	8	2.5	2.5	60.0
	Nicotinic pouches/gums	53	16.6	16.6	76.6
	E-cigarette	75	23.4	23.4	100.0
	Total	320	100.0	100.0	

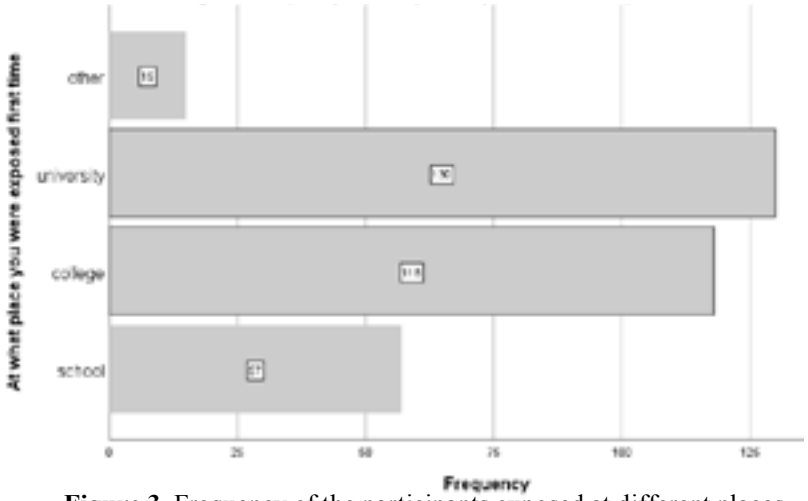

Figure 3. Frequency of the participants exposed at different places

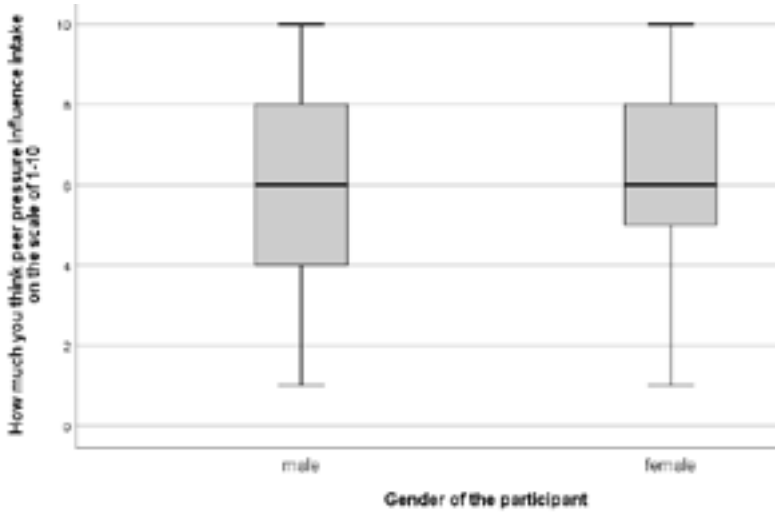

Figure 4. Participant perception of the peer pressure influence

Table 2. Nicotine products currently used by the participant according to gender*

	n	Male	Female	Total
Nicotine product used	Cigarette	150	34	184
	Cigar	7	1	8
	Nicotinic pouches/gums	32	21	53
	E-cigarette	49	26	75
	Total	238	82	320

*p=0.003

Table 3. Chi-Square tests

	Value	df	Asymptomatic significance (2-sided)
Pearson Chi-Square	12.852[a]	3	0.005
Likelihood ratio	12.496	3	0.006
Linear-by-linear association	2.356	1	0.125
N of valid cases	320		

[a]1 cell (12.5%) had expected count less than 5. The minimum expected count was 4.08.

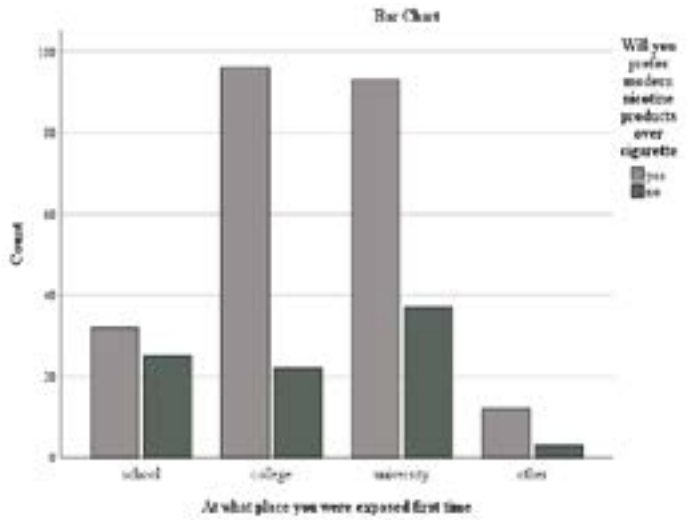

Figure 5. A bar showing participants' preferences for modern nicotine products at different places

320 participants regarding the place of their exposure to nicotine products and which place was more prone to exposure to nicotine products varied significantly. The majority of participants perceived college to be the most common place of exposure to nicotine products, followed by university and school. The "other" category had the lowest number of responses and perceptions of being prone to the use of nicotine products. The Chi-Square test (χ^2=19.576, df=9, p=0.021) suggested a significant association between the two variables.

The relationship between individuals' perception of whether their health was currently being affected by the use of nicotine products and their willingness to stop using the nicotine products showed that 26 individuals did not believe their health was being affected by the use of nicotine products and were willing to stop using nicotine products. Forty-eight individuals hesitated to stop, regardless of their health status. 79 were still deciding. One hundred sixty-seven individuals were willing to stop using nicotine products, irrespective of their health status. There were individuals in both groups (those who believed their health was affected and those who didn't) willing to quit. Still, there were also individuals in both groups who were hesitant or indecisive *(Table 4).*

The Chi-Square values (χ^2=11.618, df=3, p=0.009) showed a significant association between individuals' perception of the impact of nicotine products on health and their willingness to quit them. Linear-by-linear association held the p value=0.041 (less than 0.05), suggesting a linear trend between the two variables *(Table 5).* It was important to note that all cells in the cross-tabulation table had expected counts

Table 4. Cross-tabulation of perception of the health of participants and willingness to quit nicotine products

Count		Due to your health, what is your willingness to stop using nicotine product				Total
		Does not affect	Hesitant	Indecisive	Willing	
Do you think your health is currently being affected by the use	Yes	14	24	33	107	178
	No	12	24	46	60	142
Total		26	48	79	167	320

Table 5. Chi-Square tests

	Value	df	Asymptomatic significance (2-sided)
Pearson Chi-Square	11.618[a]	3	0.009
Likelihood ratio	11.652	3	0.009
Linear-by-linear association	4.163	1	0.041
N of valid cases	320		

[a]0 cell (0%) had expected count less than 5. The minimum expected count was 11.54.

greater than 5, and the minimum expected count was 11.54. This indicated that chi-square analysis was not affected by the low count, which enhanced the reliability of the result.

DISCUSSION

The findings from our study of 320 participants provided valuable insight into the demographics, frequency, and perception regarding the usage of nicotine products in the young population at the University of Islamabad, Pakistan. In this study, we examined the key findings, their implications, and areas of further exploration.

In examining the demographics of our study, we found the mean age to be 22.31 years, with a median age of 22 years, indicating a relatively young population. The National Survey on Drug Use and Health of America, 2014, had similar findings.11 Most participants identify as male, comprising 74.4% of the population. This gender distribution aligns with the previous research demonstrating a high prevalence of use of nicotine products among males.[12] Most participants were students, signifying the experimentation and use within the educational institutions.

Cigarettes emerged as the most commonly used nicotine product, with 57.5% reporting the use, followed by e-cigarettes, with 23.4% of the participants reporting its usage *(Figure 6).* These findings indicate that although conventional nicotine products remain highly prevalent, newer alternatives are gaining rapid popularity among the young generation.[13]

In terms of exposure, notable participants reported being exposed to nicotine products during university years, with college being the second most registered place. These findings implicate that educational institutions play a pivotal role in shaping attitudes and behaviour related to the use of nicotine products.[14]

The frequency of usage of nicotine products among the participants varied. One-third of the population reported using it once daily, and another one-third reported using it 2 to 3 times daily. A smaller group of people reported more frequent usage, with 12.2% of them saying the usage to be seven times a day. These findings demonstrate the diversity of consumption habits among the participants.

The analysis of peer pressure on the study population revealed that the mean influence rating was 5.96, signifying a moderate level of peer pressure influence on the young participants. This result underscores the impact of social factors among the participants.

Our research found significant associations between different variables. Gender was found to be significantly associated with nicotine product usage, with men more likely to use nicotine products.[12] Additionally, the place of exposure was significantly associated with the frequency of usage of nicotine products, indicating that the context in which individuals are exposed may influence their consumption pattern. Furthermore, the place of exposure was significantly associated with the preference for using modern nicotine products over conventional ones, highlighting the role of environmental factors in shaping preference.

Finally, participant's perceptions of the impact of using nicotine products on their health and their willingness to quit were assessed. This asserts that

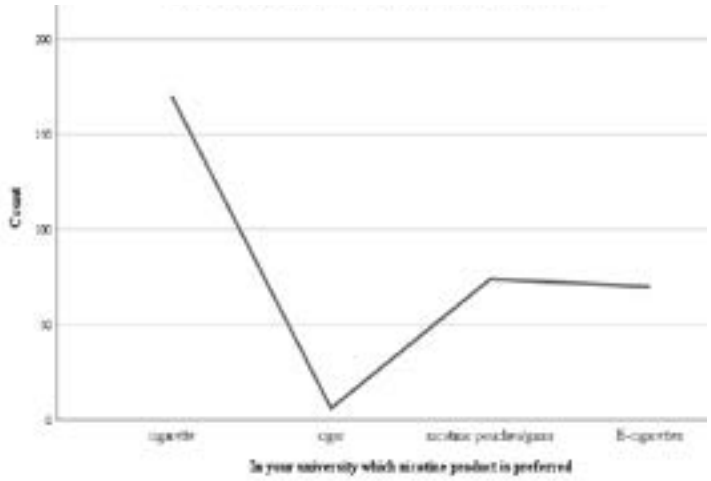

Figure 6. Line graph showing preference of nicotine product at their institution

individuals who believe that the usage of nicotine products is impacting their health are more inclined to quit, indicating the potential health-focused interventions.

This research had limitations, including cross-sectional design, potential self-reporting bias, and specific demographic characteristics of our population. Future research should explore these factors in more diverse populations and employ a longitudinal design to understand better the dynamics behind the usage of the nicotinic product.

The study provides valuable insight into the complex relationship between demographics, usage patterns, and perceptions of the young generation regarding nicotine products. Given the high prevalence among the young generation, healthcare programs and agencies should prioritise targeted prevention and educational programs in educational institutions.[11] Tailored intervention may be more beneficial regarding the needs of male and female users.[12] Educational institutions may consider adopting and enforcing nicotine-free campus policies and offering resources for nicotine cessation.[14] In primary settings, healthcare providers can integrate brief assessments of nicotine usage, peer influence, and health perceptions into routine patient care. This proactive approach can identify high-risk individuals and provide timely support.

CONCLUSIONS

In conclusion, our study sheds light on various aspects of the usage of nicotine products, from demographics to consumption patterns and perceptions. These findings can inform public health interventions and educational programs aimed at reducing nicotine products and promoting healthier choices, especially among the young population in Pakistan. Further research is needed to understand the underlying factors and effectiveness of intervention strategies.

Acknowledgment

No funding was required for the research project.

Conflict of Interest

All authors declare that there is no conflict of interest in this study.

Ethical Approval

Approved by IRB review board & ethics committee (Shifa Tameer-e-Millat University) Ref: IRB #027-22.

Authors' Contribution

Study Conception: AH, TF, SWKN, SH, HM, SN; Study Design: AH, SN; Literature Review: AH, TF, SWKN; Critical Review: AH, TF, SWKN, SH, HM, SN; Data Collection and/or Processing: SH, SWKN, HM, TF; Analysis and/or Data Interpretation: AH, SN; Manuscript preparing: AH.

REFERENCES

1. Pepper JK, Brewer NT. Electronic nicotine delivery system (electronic cigarette) awareness, use, reactions and beliefs: a systematic review. Tob Control. 2014 Sep;23(5):375-84. doi: 10.1136/tobaccocontrol-2013-051122.
2. Ng M, Freeman MK, Fleming TD, Robinson M, Dwyer-Lindgren L, Thomson B, Wollum A, Sanman E, Wulf S, Lopez AD, Murray CJ, Gakidou E. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. JAMA. 2014 Jan 8;311(2):183-92. doi: 10.1001/jama.2013.284692.
3. Benowitz NL, Goniewicz ML. The regulatory challenge of electronic cigarettes. JAMA. 2013 Aug 21;310(7):685-6. doi: 10.1001/jama.2013.109501.
4. Kim AE, Arnold KY, Makarenko O. E-cigarette advertising expenditures in the U.S., 2011-2012. Am J Prev Med. 2014 Apr;46(4):409-12. doi: 10.1016/j.amepre.2013.11.003.
5. Wang B, King BA, Corey CG, Arrazola RA, Johnson SE. Awareness and use of non-conventional tobacco products among U.S. students, 2012. Am J Prev Med. 2014 Aug;47(2 Suppl 1):S36-52. doi: 10.1016/j.amepre.2014.05.003.
6. Vaping Devices (Electronic Cigarettes) DrugFacts. National Institute On Drug Abuse [Internet]. Jan 2020. Available at: https://nida.nih.gov/publications/drugfacts/vaping-devices-electronic-cigarettes. Accessed Jan 26, 2022.
7. Rafique I, Nadeem Saqib MA, Bashir F, Naz S, Naz S. Comparison of Tobacco Consumption among Adults in SAARC Countries (Pakistan, India and Bangladesh). J Pak Med Assoc. 2018 May;68(Suppl 2)(5):S2-S6.

8. Grana RA, Ling PM. "Smoking revolution": a content analysis of electronic cigarette retail websites. Am J Prev Med. 2014 Apr;46(4):395-403. doi: 10.1016/j.amepre.2013.12.010.
9. Kong G, Morean ME, Cavallo DA, Camenga DR, Krishnan-Sarin S. Reasons for electronic cigarette experimentation and discontinuation among adolescents and young adults. Nicotine Tob Res. 2015 Jul;17(7):847-54. doi: 10.1093/ntr/ntu257.
10. Choi K, Fabian L, Mottey N, Corbett A, Forster J. Young adults' favorable perceptions of snus, dissolvable tobacco products, and electronic cigarettes: findings from a focus group study. Am J Public Health. 2012 Nov;102(11):2088-93. doi: 10.2105/AJPH.2011.300525.
11. Tobacco Use. Substance Abuse and Mental Health Services Administration. Behavioral Health Trends in the United States: Results from the 2014 National Survey on Drug Use and Health [Internet]. September 2015:14-18. Available at: https://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf.
12. Piñeiro B, Correa JB, Simmons VN, Harrell PT, Menzie NS, Unrod M, Meltzer LR, Brandon TH. Gender differences in use and expectancies of e-cigarettes: Online survey results. Addict Behav. 2016 Jan;52:91-7. doi: 10.1016/j.addbeh.2015.09.006.
13. Mendelsohn CP, Wodak A, Hall W, Borland R. A critical analysis of 'Electronic cigarettes and health outcomes: Systematic review of global evidence'. Drug Alcohol Rev. 2022 Nov;41(7):1493-8. doi: 10.1111/dar.13515.
14. Lucherini M, Rooke C, Amos A. E-cigarettes, vaping and performativity in the context of tobacco denormalisation. Sociol Health Illn. 2018 Jul;40(6):1037-52. doi: 10.1111/1467-9566.12741.