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Review Article

Components and Harm Perceptions of E-Cigarettes: Health Risks and Intervention Strategies among Multicultural Youth in Pakistan

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What's Known

- Previously conducted research shows that e-cigarettes are perceived as less harmful than traditional tobacco products, and their popularity is growing among youth globally due to factors including a variety of flavors, appealing design, and the ability for covert use.
- However, the associated health risks, including addiction and exposure to toxic substances, remain significant concerns.

What's New

- The current study uncovers the sociocultural and digital marketing influences on the growing trend of e-cigarette use among youth in Pakistan, highlighting the role of westernization and targeted marketing in normalizing vaping.
- Additionally, it emphasizes the need for culturally tailored interventions to address the rising prevalence of e-cigarette use, particularly in developing nations such as Pakistan.

Abstract

The utilization of e-cigarettes among youth in Pakistan is increasing due to their attractive appearance, user-friendly design, reduced smoking discomfort, and availability in a variety of flavors. Although e-cigarettes are often perceived as less toxic than traditional cigarettes, they still pose significant health risks such as respiratory issues, cardiovascular problems, potential neurodevelopmental effects in adolescents, and increased likelihood of transitioning to conventional tobacco products due to the presence of harmful chemicals and ingredients such as nicotine and other toxic substances. Adolescents in Pakistan have strong opinions about e-cigarette use, primarily influenced by sociocultural values; Westernization and globalization have made vaping appear to be a chic and sophisticated lifestyle choice. Moreover, views on addiction, dependency, and substance use are shaped by social backgrounds, religious beliefs, and cultural norms. Aggressive marketing techniques are employed by e-cigarette manufacturers, mainly targeting tech-savvy youth through digital platforms and social media influencers, which have also contributed to the rapid rise in e-cigarette use among young people in Pakistan. The current study underscores the necessity for culturally compatible interventions and policies, including educational programs, stringent regulations to limit access for young people, and comprehensive public health campaigns that counteract the influence of marketing by e-cigarette manufacturers. Additionally, healthcare providers should be trained to offer culturally sensitive cessation programs that support adolescents in quitting e-cigarettes and provide resources to mitigate the health hazards associated with e-cigarette use, including nicotine addiction and other adverse health effects, and to promote tobacco cessation in Pakistan.

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Introduction

The global prevalence of e-cigarettes is 23% for lifetime use and 11% for current use. The lifetime and present prevalences of e-cigarette use among women are 16% and 8%, respectively. Furthermore, the lifetime and current prevalences of e-cigarette use among men are 22% and 12%, respectively.[1] Approximately

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23% of people smoke cigarettes globally. This includes 7% of all women and 32% of all men. Around 45% of people worldwide smoke, with the Caribbean and North America having the lowest prevalence rates at 20%. Eastern and Southeast Asia have the highest rates of smoking. In Pakistan, the prevalence of tobacco increases with age,[2] peaking among men aged between 45 and 64 years,[3] The Pakistan Demographic and Health Survey (PDHS) reports that in 2017-18, 23% of men and 5% of women (because they drink less) used tobacco products, including cigarettes, "hookah," "shisha," "paan," "gutka," and "niswar." According to the PDHS, 22% of men and 3% of women smoke cigarettes.[4, 5]

Modern e-cigarettes are an even more socially acceptable option[6] among teenagers and youth of Pakistan, rather than traditional cigarette smoking, due to their appealing looks,[7] convenient functions,[8] reduced unpleasant smoking experiences,[9] delectable flavors, and the ability to be used discreetly.[5] However, if this behavior remains unchecked, it could harm one's bodily and emotional well-being. As a result, it is essential to ascertain usage habits, particularly for teens and young people.[10]

This rise in e-cigarette use among youth is associated with several factors, including the widespread availability of e-cigarettes, both through physical retail outlets and online platforms,[11] which has made these products easily accessible to young consumers. Moreover, aggressive marketing strategies by e-cigarette companies, often using digital platforms and social media influencers, have effectively targeted the tech-savvy youth population.[12]

Furthermore, perceptions regarding the usage of e-cigarettes among Pakistani youth are significantly shaped by sociocultural factors. Vaping is one of the new lifestyle trends and behaviors brought about by globalization and westernization that some young people find fashionable and sophisticated. Moreover, teenagers from a variety of socioeconomic backgrounds in Pakistan have adopted e-cigarettes due to their view as a status symbol or a way to socialize.[13]

Pakistan is home to various ethnic groups, languages, and multicultural traditions within its territory, creating a mix of ever-changing cultural variety. There are many different ethnic groups living in the country, each with its unique cultural heritage and customs, such as Mohajirs, Baloch, Pashtuns, Sindhis, and Punjabis.[14] Moreover, there lies a religious diversity among the people of Pakistan; the majority of its people are Muslims, but there are also significant populations of Christians, Hindus, Sikhs, and other minorities.[15] Different cultures of young Pakistani adults contribute to their diverse identity by influencing their viewpoints, mother languages,[16] actions, and attitudes regarding societal issues, such as using e-cigarettes.[17]

Pakistan has several programs and initiatives under the framework of the World Health Organization (WHO) guidelines on the control of tobacco, which involve increases in the prices of cigarettes and taxes, such as general sales tax,[18] implementing warning laws, banning public smoking and advertising, and prohibiting cigarette sales in educational institutes. The prevalence of cigarette smoking in Pakistan is lower than in other South-Asian countries, particularly Nepal and Sri Lanka.[19]

There have been several studies available on e-cigarettes' continuously increasing prevalence worldwide, preferably in Europe and America, which have significant detrimental effects on the health of youth; still, specific research has not been conducted in most South Asian countries such as Pakistan. Therefore, there remains a substantial gap in the literature regarding the sociocultural factors influencing e-cigarette use among Pakistani youth. A large number of studies just focused on regional demographic data but overlooked the unique cultural, religious, and social dynamics in South Asian countries such as Pakistan. Although some studies have explained tobacco use in Pakistan, they still revolve around conventional smoking techniques such as cigarettes, hookah, and shisha. Thus, there is a lack of analysis highlighting the factors that promote the use of e-cigarettes, particularly in Pakistan. These significant factors include the role of globalization and local marketing strategies. Furthermore, there is insufficient research on the effectiveness of current tobacco control and prevention policies in highlighting the increasing trend of e-cigarette use among adolescents and young adults in Pakistan. All these parameters demand an understanding of e-cigarette use and the development of policies and strategies to limit and minimize the use of e-cigarettes among the youth of Pakistan, ultimately improving the quality of life.

This review article highlights how sociocultural factors, marketing strategies, and perceptions influence the rapidly increasing prevalence of e-cigarette use in teenagers and adolescents in Pakistan as well as the potential implications for public health and tobacco control policies.

E-Cigarettes

E-cigarettes are often thought to be less harmful than conventional cigarettes;[20] but the fact is that it is as dangerous as regular

cigarettes. The components of e-cigarettes involve propylene glycol (PG) and glycerol mixed with concentrated flavors and, sometimes, different percentages of nicotine (NIC).[21] Moreover, several other agents are present in the cartridges, refill solutions, and aerosols of e-cigarettes.[22] Furthermore, more compounds are found in aerosol solutions because fewer chemicals are formed during vaporization.

Components of E-Cigarettes: Substances present in liquid and aerosol e-cigarettes include NIC, solvent carriers (PG and glycerol), tobacco-specific nitrosamines (TSNAs), aldehydes, metals, volatile organic compounds (VOCs), phenolic compounds, polycyclic aromatic hydrocarbons (PAHS), flavorings, tobacco alkaloids, and drugs.[23] The substances, ingredients, and chemicals present in e-cigarettes are toxic and carcinogenic and cause life-threatening respiratory and cardiac diseases and environmental emissions.[24]

Common constituents in vape liquids are glycerin and glycol, which irritate the upper respiratory tract and may trigger dry coughing and irritation of the mouth and throat.[25] However, the significant side effect of vaping for a long time is the development of NIC addiction, the chemical agent primarily used in e-cigarettes.[26]

Mechanical mods are a more advanced type of e-cigarette that do not include any electronic circuitry. They work by direct contact between the battery and the atomizer.[27] Disposable e-cigarettes are single-use devices that come pre-filled with e-liquid. They are ready to use out of the box and require no maintenance. Disposable e-cigarettes are convenient for occasional or travel use.[28] Sub-ohm vaping refers to using coils with a resistance below 1 ohm. These devices require a higher-powered battery for optimal performance.

Temperature control mods have advanced circuitry and sensors, allowing users to set and control the atomizer coil's temperature. This feature helps prevent dry hits and provides a consistent vaping experience.[29] Hybrid mods are a combination of mechanical and regulated mods, offering the customization options of a controlled device with the simplicity and direct power delivery of a mechanical mod. They often incorporate safety features and adjustable settings.[30]

"E-cigs," "vapes," "e-hookahs," "vape pens," and "electronic NIC delivery systems (ENDS)" are other terms for e-cigarettes.[8] It is classified into four generations, which are shown in table 1.

Harm Perceptions of E-Cigarettes among Multicultural Youth of Pakistan

Pakistan's population diversity influences youth perceptions of the health hazards of e-cigarettes.[35] Certain cultural groups might be more conscious of the possible risks related to vaping, while others would view e-cigarettes as safe or even advantageous substitutes for conventional tobacco products.[36] Perceptions of the hazards associated with e-cigarettes are influenced by cultural attitudes about health and wellness, as well as opinions about the effectiveness of current technology in treating health issues.[37] For example, communities emphasizing natural health care might be cautious about e-cigarettes. However, those more open to technology advancements might be more open to the advantages of vaping.[38]

In Pakistan, variations exist regarding the way addiction and e-cigarette dependence are perceived in different societies. While certain cultural groups believe NIC addiction to be a severe issue, others may be unaware of how addictive vaping can be or think it is not as bad as traditional smoking. Perceptions of individual choice and self-control, together with cultural views regarding substance use and dependency, influence how addiction to e-cigarettes is perceived and experienced. Cultural variables, such as social norms surrounding substance

Table 1: Classification of e-cigarettes based on their generation, type, and specification

Reference	Generation	Type	Specification
Ruther et al., 2018[31]	First generation	Disposable e-cigarettes (Ciga-likes) See figure 1	Designed for one-time use only. Not rechargeable or refillable. Discarded when out of charge or e-liquid. Mimics the look and feel of combustible cigarettes.
DeVito and Krishnan-Sarin, 2017; Ruther et al., 2018[31, 32]	Second generation	E-cigarettes with prefilled or refillable cartridges See figure 1	Rechargeable e-cigarette with prefilled or refillable cartridges. Cartridge attached to a battery pen, purchased separately or in starter packs.
M. Williams and Talbot, 2019[33]	Third generation	Tanks or mods See figure 1	Rechargeable e-cigarette allowing customization. Modifiable devices.
Childers-Kakos, 2022[34]	Fourth generation	Pod mods See figure 1	E-cigarettes with prefilled or refillable pods come in various shapes, sizes, and colors. They use NIC salts for more effortless inhalation.

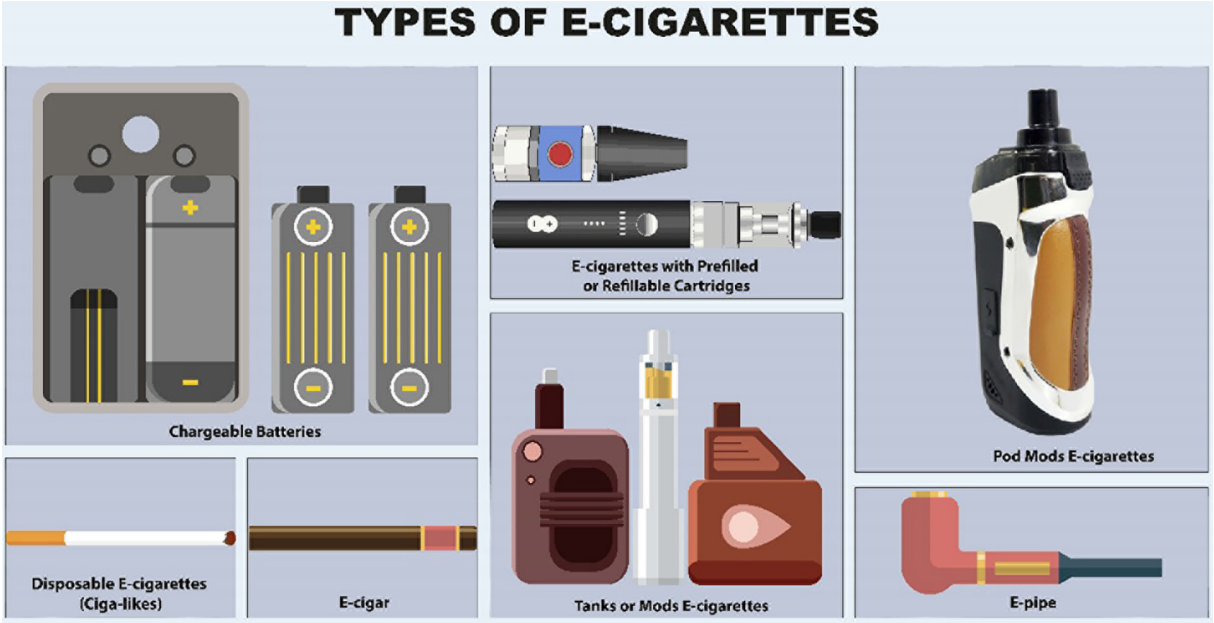

Figure 1: E-cigarettes are classified based on their structure and functionality.

use and smoking, may additionally affect views toward addiction; cultures that degrade smoking tend to be more opposed to e-cigarette addiction.[39-41]

The perspective that multicultural youth in Pakistan have related to the risks associated with e-cigarettes is immensely influenced by cultural norms and beliefs.[39] Values, including religious convictions, family honor, and cohesiveness within society, largely influence perceptions of e-cigarette use in multicultural societies. For instance, cultural norms that emphasize the well-being of society can cause people to worry more about the possible risks associated with e-cigarettes, especially concerning exposure to secondhand aerosol emissions.[42]

Behavioral Associations and Positive Adherence

In Pakistan's multicultural youth, cultural factors have a significant effect on whether they start using e-cigarettes and continue to do so.[43] Attitudes toward engaging with novel products, such as e-cigarettes, are influenced by cultural values, customs, and practices, as shown in figure 2. Certain cultural groups are more adventurous and willing to take risks than others.[44] Furthermore, in particular cultural settings, the use of e-cigarettes as status symbols or social props may be influenced by values around leisure and socialization.

Furthermore, cultural constructs of gender can affect product choices and consumption behaviors, and notions of masculinity, femininity, and gender roles might influence patterns of e-cigarette usage As it is a country with low-income societies, there are barriers to smoking cessation, which play a pivotal role in the high prevalence rate. These barriers include:

Lack of Self-Efficacy: Self-efficacy is self-control or faith in our abilities to overcome problems and accomplish tasks.[45] Individuals who have made multiple attempts to stop smoking but are unsuccessful may seek to rationalize their failure by expressing a great sense of confidence in their ability to stop smoking at any time and when they choose. Some believe that the smoking habit is too strong to break.[46]

Peer Pressure: The influence of peers poses a substantial obstacle to stopping smoking. It is essential to keep in mind that a society that accepts smoking as a normal social behavior serves as an effective barrier to quitting as well as an alluring invitation to start smoking. Colleagues, friends, family, other students, and college alumni all play major roles in an individual's decisions. One significant obstacle to stopping smoking for the participants is their inability to withstand peer pressure and the company of their smoking buddies. Giving up smoking is a challenging task in a society and community where smoking is socially acceptable.[47, 48]

Craving: One obstacle is the craving for the smoking habit. Smokers believe it is impossible to break the habit of always having something in their hands, especially when alone. They fail to convince them to stop smoking combustible tobacco, even after real-life examples of how it causes significant health issues and ultimately leads to death.[49]

Figure 2: Key factors influencing e-cigarette use.

A more recent development in tobacco harm reduction is the e-cigarette. They are promoted as safer substitutes for smoking. Millions of individuals currently use these devices, and their awareness and use have expanded tremendously in recent years.[50]

Health Implications of E-Cigarette Use among Multicultural Youth of Pakistan

The health concerns associated with e-cigarettes and multicultural youth's understanding of access to healthcare are influenced by cultural disparities and socioeconomic challenges in Pakistan. Culturally marginalized populations face challenges such as language problems and a lack of culturally appropriate health information, which makes it difficult for them to make educated decisions or seek medical attention on time. To decrease health disparities related to e-cigarette use, managing these issues requires culturally competent healthcare services and customized health education programs.[10, 51]

Side Effects of Vaping: Many side effects of vaping have been reported, including dry mouth,[52] dizziness,[53] cough,[53] dry skin,[54] itchiness,[54] dry eyes,[55] and nosebleeds.[56]

Long-Term Side Effects of Vaping: Vaping is a recent phenomenon, resulting in a scarcity of long-term studies that illustrate its impacts. Nevertheless, the U.S. Surgeon General warns that prolonged dangers may encompass nicotine addiction, emotional disorders, and diminished impulse control.[57] NIC can also alter the formation of synapses in the brain, potentially impairing regions associated with attention and learning. Moreover, there are apprehensions over the effects of vaping on pulmonary and cardiovascular health.[58] Different harmful effects caused by e-cigarettes are described in table 2.

Environmental Effects of E-Cigarettes: Electrical safety devices (ESDs) should be regulated similarly to cigarette smoking due to the harmful chemicals they release into the air, as described by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). The "E-cigarettes do not produce a vapor (gas), but rather a dense, visible aerosol of liquid sub-micron droplets consisting of glycols, nicotine, and other chemicals, some of which are carcinogenic (e.g., formaldehyde, metals such as cadmium, lead, and nickel, and nitrosamines). In general, ESDs contribute to indoor air pollution through the release of VOCs and ultrafine/fine particles, leading to the phenomenon known as "passive vaping".[64]

To reduce the risk of passersby inhaling the aerosol released by the devices and to prevent undermining the implementation of smoke-free legislation, the WHO advises against using ESDs indoors, especially in smoke-free workplaces.[65]

Behavioral Associations with E-Cigarettes

E-cigarettes, commonly referred to as electronic cigarettes, are frequently advertised as a safer option than regular tobacco cigarettes. However, there are growing concerns about the potential behavioral associations with e-cigarette use, as shown in figure 2, which are:

Increased Tobacco Cigarette Use: The habit of using e-cigarettes leads to dependency on their constituents, such as NIC, which are also present in tobacco smoking. This is a significant issue because it is the leading cause of deaths from preventable causes worldwide.[66, 67]

Table 2: Adverse effects of e-cigarette use on various organs, including the lungs, heart, brain, and teeth

References	Aspect/Organ	Effects
Schiliro et al., 2021[59]	Lungs	- Possible harm to lung health during COVID-19 pandemic - Risk of severe pulmonary disease among e-cigarette users (CDC).
Galbraith and Weill, 2009[60]	Popcorn Lung	- Bronchiolitis obliterans due to diacetyl exposure - Thickening and narrowing of airways lead to coughing, shortness of breath, and wheezing.
Kuntic et al., 2020[61]	Heart	- Daily vaping doubles the risk of heart attacks - Long-term effects are uncertain, but nicotine's impact on cardiac health is well-established.
Chen et al., 2021[62]	Brain	- Alteration in the body's response to stress - Changes in brain connections impact attention and learning, especially concerning younger populations.
Yang et al., 2020[63]	Teeth	- Possible mouth dryness, irritation, and gum disease associated with vaping- Presence of harmful bacteria in vapers' mouths.

Increased Risk-Taking Behavior: E-cigarettes contain NIC, which alters a person's mental health, which ultimately leads to increased chances of participating in dangerous and harmful activities, such as drug misuse and delinquency. Teenagers who smoked e-cigarettes were more likely to admit to committing crimes, including property theft or vandalism.[68]

Negative Impact on Mental Health: The use of e-cigarettes among teenagers and youth in Pakistan has harmful adverse effects on mental well-being. E-cigarette usage has been linked to a longer duration of heightened symptoms of anxiety, aggressiveness, and sadness.[69]

Reduced Impulse Control: Long-term use of e-cigarettes results in less control over impulses, which may raise the chance of impulsive and dangerous behavior. Adolescents are the primary target since they may be more vulnerable to social and peer pressure.[70]

Gateway to Other Substance Use: E-cigarette use has also been identified as a potential gateway to other substance use, particularly among young people. Research has proved that individuals, whether teens or adults, who use e-cigarettes have a higher chance of using other recreational substances, such as alcohol and marijuana.[71]

Use in Social Situations: The use of e-cigarettes is higher among youth in social situations than when sitting alone because it is associated with increased social activity and perceived social benefits, such as enhanced social connections and improved mood. Many people use e-cigarettes as a tool for socializing and interacting with other users to increase their social and friend circle.[72]

Smoking Cessation: Many people who use e-cigarettes claim that they are using them as tools for smoking cessation, although their efficacy in this regard is still questionable. Research has proved that e-cigarettes are not more effective than NIC replacement therapy in smoking cessation. E-cigarettes can provide a NIC fix without the harmful chemicals found in tobacco smoke.[73]

Stress Relief: Some people use e-cigarettes as a way to relieve stress or anxiety, as shown in figure 2. However, this can lead to a reliance on vaping and potentially harmful NIC addiction.[74]

Experimentation: Some young people may try e-cigarettes out of curiosity or to experiment with smoking. When young people see celebrities vaping on screen, they find it exciting and want to try it themselves.[75]

Intervention Strategies

Effective healthcare initiatives and policies that meet the particular needs and challenges of varied cultural communities must address the increasing prevalence of e-cigarette use among multicultural youth in Pakistan.[76,77] A comparative analysis of interventions and policies regarding e-cigarette use among multicultural youth in Pakistan and countries across the globe is given in table 3.

Healthcare policies should prioritize equitable access to prevention, treatment, and cessation services while considering language and cultural diversity.[84] Further, to promote healthy behaviors and disseminate culturally appropriate health information, public health programs should collaborate with religious institutions, community organizations, and cultural leaders.[85]

Intervention strategies for e-cigarette prevention and cessation are crucial and essential because they can help youth make better decisions as they go through the life of adolescence and the social pressure that comes with it.[86] It is crucial to educate them about the potential harms and risks associated with the use of e-cigarettes. For that purpose, adopting e-cigarette cessation and prevention programs is necessary.[87] As these programs are relatively new, there is still significant room for improvement and modification in these strategies.[88]

Table 3: Policies adopted in various countries to regulate the utilization of e-cigarettes

References	Country	Policies	Key features	Approach
Farrelly et al.,2021[78]	United States	The FDA has implemented regulations restricting e-cigarette sales to minors. Some states have banned flavored e-cigarettes. Mass media campaigns like "The Real Cost" target youth	Restriction of sales to minors -Flavor bans in some states -Mass media campaigns targeting youth and diverse populations	Preventive: Focus on educating youth and limiting access
New Laws for Vapes |Youth Vaping| Australian Government Department of Health and Aged Care, 2024[79]	Australia	E-cigarettes containing nicotine are treated as controlled substances, requiring a prescription.	-Nicotine vaping products require a prescription -Strict regulations on e-cigarettes	Strict Regulatory: Limited accessibility to nicotine products
Vaping in England: An Evidence Update February 2019 -GOV. UK, 2019[80]	United Kingdom	E-cigarettes are promoted as a less harmful alternative to smoking and used as a cessation tool for adult smokers. Marketing and accessibility are regulated to protect youth.	-E-cigarettes promoted for smoking cessation -Youth-focused marketing restrictions	Harm Reduction: Balances smoking cessation promotion and youth protection
Gentry et al., 2019; Oke et al., 2024; Prohibitions of Smoking and Protection of Non-Smokers Health Ordinance, 2002, 2002[81-83]	Pakistan	There are no specific national policies targeting e-cigarette use among youth. General tobacco laws exist, but enforcement is inconsistent.	Lacks e-cigarette-specific regulations -General tobacco control laws, but not well-enforced	Regulatory Gap: Needs stricter measures, including banning flavors, restricting youth access, and controlling marketing

Cessation Programs: Adults and older youth who already use e-cigarettes should be treated with respect and provided with appropriate support through individual or group counseling, messaging interventions, pharmacological interventions, and nicotine replacement therapies. Despite the availability of evidence-based programs for smoking cessation, limited options tailored explicitly for e-cigarette users are available in Pakistan.[89] Importantly, programs for e-cigarette cessation should not simply mirror tobacco cessation strategies due to the differences in sociocultural norms, beliefs, and values associated with each product.[90]

E-cigarette cessation programs for adolescents should focus on flavor contents, adverse health effects, targeted marketing strategies, and the development of refusal skills to combat social pressures However, a significant gap remains regarding the interactivity and aesthetic appeal of prevention content, which does not currently match the engaging marketing techniques employed by the e-cigarette industry.[91] Additionally, interactive games educating youth about tobacco and e-cigarette prevention could improve program effectiveness.[88]

Need for Evidence-Based Cessation Tools: Currently, more e-cigarette prevention programs are available than cessation programs, highlighting the need for more evidence-based tools and resources for adolescent cessation.[88, 92] Additionally, there are no FDA-approved nicotine replacement therapies for teenage e-cigarette users, underscoring the need for further research into psychosocial needs and withdrawal symptoms related to e-cigarette cessation.[93]

School-Based Programs: Schools and colleges should be targeted as they are places where adults and youth are in high numbers. For that purpose, youth should be taught in classes about prevention and cessation strategies regarding e-cigarette use.[94] Moreover, they should be aware of potential harms and detrimental effects on human health. This strategy can significantly reduce the use of e-cigarettes and change perceptions related to e-cigarette use among the youth.[95] However, more effective techniques can focus on school-based e-cigarette prevention programs, including interactive curriculum, activities around refusal skills, and content addressing targeted marketing and health effects.

Community-Based Approaches: In addressing e-cigarette use among multicultural youth in Pakistan, community-based initiatives should leverage local networks and resources to implement prevention and cessation strategies.[96] Healthcare providers must also be highly skilled and culturally competent, enabling them to deliver early intervention and effectively support a diverse population.[97]

These interventions and policies ultimately decrease the detrimental and harmful effects of vaping on multicultural youth by identifying the trigger factors, such as different religious beliefs and norms, regional customs, and socioeconomic and health-related factors.

Rules and Legislation: Rules and regulations should be established to limit young people's access to e-cigarettes and stop marketing strategies that specifically target ethnic populations.[87, 98] The government of Pakistan should identify risks imposed by the use of e-cigarettes and implement strict health-oriented prevention strategies and policies for the welfare and betterment of its multicultural public.[99]

Effective healthcare policies that consider these cultural nuances can promote the welfare of Pakistan's multicultural population.

Future Prospect and Recommendation: Numerous factors play a vital role in the increasing prevalence of e-cigarettes. Proper understanding and deep identification of these factors still need to be done. The global prevalence of e-cigarettes is rapidly increasing, particularly among teenagers and young adults, due to their beliefs, norms, cultural and religious values, and their desire to look modern. To reduce e-cigarette use, effective strategies must be implemented that address the primary causes of increased vaping. Thus, it will be more beneficial to understand the factors that promote its use while developing strategies and usage reduction plans. Initiatives such as awareness programs through digital platforms, *i.e.*, through campaigns on the internet and advertisements on television, radio, and newspapers, can significantly decrease its prevalence. Moreover, counseling for mental and personal well-being can also limit its use. However, all these facilities should be provided to all teenagers regardless of gender, socio-economic class, and religion. Policymakers and regulatory authorities should develop more inclusive and tactical plans to ensure equitable access to all youth by recognizing their cultural diversity in tobacco control programs.

Conclusion

In conclusion, the use of e-cigarettes among the youth of Pakistan is rapidly increasing, which demands the immediate need for strategies, interventions, and policies to limit their use. Regulatory authorities should implement these policies for the multicultural youth of Pakistan, and proper supervision of these interventions is needed to obtain better results. Moreover, studies have shown an alarming association between e-cigarette use and health problems, such as anxiety and depression, particularly among young people, which can lead the individual to criminal activities and may result in damage to society by causing substantial financial and emotional harm. Moreover, a change is needed in the point of view of youth regarding e-cigarettes, which regard it as a symbol of westernization and globalization; in fact, it causes harm to them. This will help policymakers design treatments and interventions to reduce the use of e-cigarettes.

The policies include awareness programs for youth and advertisement through digital platforms by highlighting its adverse effects, limiting the sale of e-cigarettes to adults and teens, and developing strict punishment for those who violate the law. Furthermore, by understanding cultural diversity in Pakistan, policymakers should ensure the equitable access of multicultural youth to prevention and cessation services, which results in decreased use of e-cigarettes. This facilitates informed discussions among stakeholders and strengthens the framework for public health interventions to reduce e-cigarette use. By addressing these various dimensions of the issue, a comprehensive approach could be developed to promote healthier choices among the youth and mitigate the potential negative impacts of e-cigarettes on individual and societal health.

Authors' Contribution

All authors contributed to the conception and design of the work, interpretation of data for the work, writing the original draft, and reviewing the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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