Knowledge, Awareness And Attitude Of Parents Of Pre-Adolescents, Adolescents And Teens Towards Vaping- A Questionnaire Study

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ABSTRACT

Background: Electronic nicotine delivery systems (ENDS), including vapes, are increasingly used by adolescents, often perceived as safer than conventional cigarettes. Parental knowledge and attitudes are critical for early prevention; however, evidence from India remains limited. This study assessed parental knowledge, awareness, and attitudes toward vaping among children and adolescents in Mumbai.

Methods: A cross-sectional, close-ended questionnaire-based survey was conducted among parents of pre-adolescents (9–12 years), adolescents, and teens (13–19 years) in Mumbai from March–May 2024 following Institutional Ethical Review Board approval (IREB/2024/PEDO/06). A content-validated 11-item questionnaire was disseminated via Google Forms through WhatsApp to 350 parents. Of 290 responses received, 46 incomplete responses were excluded; 246 complete responses were analyzed using SPSS v30. Associations were assessed using Chi-square test with $p<0.05$.

Results: Overall, 73.1% parents were aware of the term "vapes," and 61.6% perceived vaping to be as addictive as cigarettes; 31% believed vapes always contain nicotine. Only 40% parents perceived that their child was familiar with vaping, while 54.3% believed social media influencers strongly impact their child's perception. Regarding harms, 55.9% reported adverse overall health effects and 57.6% believed vaping can affect oral health (11% were unsure). Most parents (68.6%) believed neither cigarettes nor vaping is safe. Although vapes are banned in India, 34.7% perceived they remain available in street shops. Device recognition errors were notable, with 40% identifying an incorrect image as a vape.

Conclusion: Despite relatively high awareness, parents demonstrate important knowledge gaps regarding vaping devices and health, including oral effects. Pediatric dentists can contribute through screening and targeted parental and youth education.

Introduction

Tobacco use remains one of the most important preventable causes of morbidity and mortality worldwide, and the public health burden is particularly pronounced in developing countries where sustained exposure, early initiation, and unequal access to cessation support compound long-term

harm.[1,2] In recent years, electronic nicotine delivery systems (ENDS), including e-cigarettes and modern vape devices, have been aggressively positioned as "safer" alternatives to conventional cigarettes.[3] This messaging, coupled with sleek device designs, appealing flavors, and easy concealability, has contributed to rapid uptake among adolescents and young adults.[3] Because nicotine dependence and neurobehavioral vulnerability are strongly linked to adolescent exposure, the expansion of ENDS use in younger age groups raises serious concerns regarding initiation, reinforcement of addictive behaviors, and potential transition to conventional tobacco products.[3,4]

Although vapes do not rely on combustion, the generated aerosol is not benign.[5] Common constituents such as propylene glycol and vegetable glycerin, along with nicotine, flavoring agents, reactive carbonyls/volatile compounds generated on heating, ultrafine particles, and trace metals from device components, have been implicated in airway irritation, inflammatory responses, and systemic effects.[5] Emerging evidence also highlights oral health implications including xerostomia, altered oral microbiome and biofilm dynamics, increased caries risk, gingival inflammation, delayed wound healing, and oral mucosal lesions.[6] For children and adolescents, these risks are amplified by neurodevelopmental susceptibility to nicotine, heightened sensitivity to peer and media influence, and limited ability to critically appraise health-related marketing claims.[3,4] Social media platforms and influencer-driven content further normalize vaping, shaping perceptions of safety, social acceptability, and desirability.[3]

In India, ENDS are prohibited under national legislation enacted in 2019, alongside broader tobacco-control frameworks.[7] Despite these measures, perceived availability and exposure continue, underscoring the need for community-level prevention.[7] Parents are pivotal stakeholders: they influence adolescents' health behaviors, regulate access, and initiate early conversations about substance use; however, parental understanding of vaping devices and the associated health (including oral health) consequences may be incomplete or inaccurate.[3] Against this background, the present study assessed parental knowledge, awareness, and attitudes toward vaping among pre-adolescents, adolescents, and teens in Mumbai, with the goal of identifying critical gaps that pediatric dentists and allied health professionals can address through targeted anticipatory guidance and prevention-focused counseling.

Methodology

A cross-sectional, close-ended questionnaire-based survey was conducted among parents of pre-adolescents, adolescents, and teenagers residing in Mumbai. The survey was carried out over a three-month period from March 2024 to May 2024. Ethical approval for the study was obtained from the Institutional Ethical Review Board (IREB Reference Number: IREB/2024/PEDO/06) prior to initiation of data collection.

Study Population and Sampling

The target population comprised parents of children belonging to the pre-adolescent (9–12 years), adolescent, and teenage (13–19 years) age groups. A total of 350 parents were approached for participation. The survey was administered using an online format to facilitate broad outreach and ease of completion. Participation was voluntary, and responses were obtained through an electronic data capture method.

Questionnaire Development and Validation

A structured close-ended questionnaire was developed to assess parental knowledge, awareness, and attitudes regarding vaping among children and adolescents. Content validation of the tool was undertaken by an expert panel consisting of 10 pediatric dentists, each with a minimum of five years of clinical experience, along with 10 parents, to ensure both professional relevance and lay comprehensibility. Validation was performed using a 4-point Likert scale focusing on clarity, relevance, and comprehensibility of each item. The initial questionnaire consisted of 14 questions; following

feedback, two questions were modified and three questions were eliminated, resulting in a final questionnaire containing 11 items. To assess reliability, the finalized questionnaire was pilot-tested among 10 parents over a period of 10 days prior to the main survey.

Data Collection Procedure

The finalized questionnaire was converted into a Google Form and disseminated electronically to parents via WhatsApp. The online format ensured standardization of the survey administration and minimized interviewer bias. Informed consent was obtained electronically prior to proceeding with the questionnaire. A total of 290 responses were received, of which 46 were excluded due to incomplete submissions. Consequently, 246 complete responses were included in the final analysis.

Eligibility Criteria

Parents were eligible for inclusion if they had children in the pre-adolescent, adolescent, or teenage age range and had access to a smartphone and internet connectivity to complete the survey. Parents who declined to provide informed consent were excluded. Additionally, parents who did not have children within the specified age groups and those without access to a smartphone or a stable internet connection were excluded to ensure appropriate representation of the target group and the feasibility of online participation.

Statistical Analysis

Data were compiled and analyzed using SPSS software (version 30). Descriptive statistics were used to summarize response distributions. Associations between response frequencies and independent variables were assessed using the Chi-square test. Statistical significance was set at a p value of less than 0.05, with an alpha error of 5% and beta error of 20%, corresponding to a power of 80%.

Results

A total of 350 parents were approached to participate in the survey. Of these, 290 responses were received. After data screening, 46 responses were excluded due to incomplete entries, and 246 fully completed questionnaires were included for final analysis. This ensured that only complete datasets were considered for the interpretation of parental knowledge, awareness, and attitudes related to vaping among children and adolescents.

Awareness and Knowledge Related to Vaping

Overall awareness of vaping terminology among parents was relatively high, with 73.1% reporting that they were acquainted with the term “vapes.” With respect to perceived addictiveness, 61.6% of parents believed that vaping has addiction potential comparable to conventional cigarette smoking. Knowledge regarding nicotine content was mixed; 31% of parents reported that vapes always contain nicotine, indicating variability in understanding of product composition and nicotine presence across devices and e-liquids (Table 1).

Perceived Child Awareness and Role of Social Influence

In contrast to the relatively high parental awareness, only 40% of parents perceived that their child was familiar with the term “vape.” Parents also strongly acknowledged the role of social media and influencer-driven content in shaping youth perceptions. Specifically, 54.3% believed that social media influencers have a very strong impact on their child’s perception of vaping, suggesting substantial concern regarding digital exposure and normalization of vaping behaviors among adolescents (Table 1).

Perceptions Regarding Health and Oral Health Effects

When asked about health consequences, 55.9% of parents believed that vaping has adverse effects on overall health, including symptoms and conditions such as headaches and respiratory diseases. Awareness regarding oral health implications was comparatively inconsistent. A majority of parents (57.6%) believed that vaping can affect oral health, while 11% reported uncertainty, indicating persisting knowledge gaps regarding specific oral consequences of vaping and the pathways through which vaping may influence the oral cavity (Table 2).

Perceived Safety and Availability Despite Legal Prohibition

Regarding comparative safety, 68.6% of parents indicated that neither cigarette smoking nor vaping is safe, reflecting a broad perception that both forms of nicotine use are harmful. Despite the legal prohibition of electronic cigarettes in India, 34.7% of parents believed that vapes remain available in street shops, suggesting perceived continued access and potential challenges in enforcement at the community level (Table 2).

Sources of Information and Device Recognition

Parents reported obtaining information about vaping through multiple channels. Peer groups were the most commonly reported source (36.7%), followed by social media (26.9%), highlighting both interpersonal and digital pathways of information transfer. Although 96% of parents correctly recognized that the displayed figures represented different objects, substantial misidentification of vaping devices was observed. Specifically, 40% of respondents identified the wrong image as a vape, underscoring confusion regarding device appearance and the potential for covert or disguised products to evade parental recognition (Table 3).

Table 1. Parental awareness and perceptions regarding vaping (N = 246)

Variable	Response option	n (%)
Awareness of the term "vapes"	Yes	180 (73.1)
	No	66 (26.9)
Perceived addictiveness compared with cigarettes	As addictive as cigarettes	152 (61.6)
	Other responses (less addictive/more addictive/unsure)	94 (38.4)
Belief that vapes always contain nicotine	Yes	76 (31.0)
	No/Unsure	170 (69.0)
Parent perception that child is aware of vaping	Yes	98 (39.8)
	No/Unsure	148 (60.2)
Perceived influence of social media influencers on child's perception	Very strong impact	134 (54.3)
	Other responses (some/none/unsure)	112 (45.7)

Table 2. Parental perceptions of harms, safety, availability, and sources of information (N = 246)

Variable	Response option	n (%)
Perception that vaping adversely affects overall health	Yes	138 (56.1)
	No/Unsure	108 (43.9)
Perception that vaping can affect oral health	Yes	142 (57.7)
	No	77 (31.3)
	Unsure	27 (11.0)
Perceived safer option: cigarette smoking vs vaping	Neither is safe	169 (68.7)
	Other responses (one is safer/unsure)	77 (31.3)
Perception that vapes are still available in street shops despite the ban	Yes	85 (34.6)
	No/Unsure	161 (65.4)
Primary source of acquaintance with vaping	Peer group	90 (36.6)
	Social media	66 (26.8)
	Other sources (not specified)	90 (36.6)

Table 3. Image-based recognition and identification of vaping device (N = 246)

Variable	Response option	n (%)
Ability to correctly identify figures (a), (b), and (c) as different objects	Yes	236 (95.9)
	No	10 (4.1)
Identification of vape device (image question)	Incorrect (identified Figure b as vape)	98 (39.8)
	Correct	148 (60.2)

Discussion

Vaping has rapidly emerged as a contemporary nicotine use pattern, particularly among adolescents, driven by product novelty, perceived harm reduction, flavor appeal, discreet device designs, and strong digital marketing ecosystems [3,8,9]. The present study adds clinically relevant Indian evidence by demonstrating that while parental familiarity with the term "vapes" was relatively high, substantial gaps persisted in how parents interpreted risk, recognized devices, and appraised the pathways through which adolescents may be exposed. This disconnect is important because parents function as primary gatekeepers for early prevention, household norms, and timely help-seeking, especially for pre-adolescents and younger teens who may not volunteer such behaviors during routine interactions.

A key finding was that parental awareness did not translate into confidence regarding their child's awareness, with far fewer parents perceiving that their child was familiar with vaping compared to parents' own familiarity. This mismatch may reflect underestimation of youth exposure in peer and online environments, discomfort in initiating conversations about nicotine products, or assumptions that "newer" devices are not relevant in school-age children. Such underestimation can delay preventive counseling and allow experimentation to occur unnoticed, particularly because modern devices can be visually inconspicuous and easily concealed [10]. The device-identification component supports this concern: even when most parents could differentiate the images as separate objects, a sizeable proportion misidentified the vape device. Misrecognition has practical consequences, as it reduces parents' ability to detect covert use, recognize paraphernalia at home, and intervene early [10].

Perceptions regarding addictiveness and nicotine content further indicated incomplete understanding of product pharmacology. While many parents believed vaping can be as addictive as cigarettes, fewer endorsed that vapes always contain nicotine, suggesting confusion about product variability (nicotine-free claims, nicotine salts, or mislabeled products) and the broader concept that nicotine delivery can be high even when aerosol "feels" smoother [10]. This is clinically significant because adolescents are particularly vulnerable to nicotine dependence and neurobehavioral reinforcement, and early dependence can entrench ongoing use and increase the likelihood of dual use with combustible tobacco [4,11]. Parents who recognize addictiveness but misunderstand nicotine presence may be less likely to consider occasional vaping as a marker of dependency risk.

The study also highlights persisting uncertainty about oral health impacts. Compared with systemic risks, oral consequences may be less intuitive to caregivers, even though clinical manifestations, xerostomia, increased caries susceptibility, gingival inflammation, altered biofilm ecology, and mucosal irritation, are directly relevant to pediatric dental practice [6]. Limited oral-health risk recognition may reduce the perceived urgency to address vaping during dental visits and may contribute to missed opportunities for anticipatory guidance. Importantly, the dental operatory provides a recurring point of contact in adolescence, often more frequent than medical encounters, positioning pediatric dentists to integrate brief, structured screening and counseling into routine preventive care [12].

Parents' strong endorsement of social media influencers as a driver of youth perceptions underscores the contemporary reality that health behaviors are increasingly shaped by digital narratives [8,9]. Adolescents are exposed not only to explicit advertisements but also to peer-generated and influencer content that can normalize use, frame vaping as "safer," and emphasize flavors and aesthetics. For prevention, this implies that traditional risk messaging alone may be insufficient; families benefit from digital literacy approaches that help adolescents evaluate persuasive content, recognize marketing intent, and understand misinformation. For clinicians, it supports the need to ask about sources of exposure, not only behaviors, and to counsel parents on monitoring, communication, and setting clear household expectations [8,9].

The finding that many parents perceive ongoing availability despite India's prohibition of ENDS is noteworthy [7,13]. Whether reflecting true access pathways or perceived access, it signals that regulation alone may not eliminate exposure and experimentation. Public health messaging and enforcement need to be accompanied by community education strategies that align parents, schools, and healthcare providers. Within this framework, pediatric dentists can play a pragmatic role by normalizing non-judgmental screening, using brief motivational interviewing techniques, addressing

oral findings that may be linked to vaping, and referring to appropriate cessation or behavioral support services when needed [12]. Overall, the study identifies actionable knowledge gaps that can guide targeted parental education and strengthen youth-focused prevention initiatives in urban Indian settings.

Conclusion

Findings of the present study revealed that although many parents in Mumbai are aware of vaping, gaps remain in their understanding of nicotine content, oral health implications, and device recognition, alongside concerns about strong social media influence on youth perceptions. The discrepancy between parental awareness and perceived child awareness suggests potential underestimation of adolescent exposure and risk. Pediatric dentists are well positioned to bridge these gaps through routine screening, anticipatory guidance, and family-centered counseling. Strengthening parent- and school-oriented awareness initiatives may support earlier prevention and reduce vaping-related harm in children and adolescents.

References:

1. GBD 2015 Tobacco Collaborators. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015. Lancet. 2017;389(10082):1885-1906. doi:10.1016/S0140-6736(17)30819-X.
2. Jha P, Peto R. Global effects of smoking, of quitting, and of taxing tobacco. N Engl J Med. 2014;370(1):60-68. doi:10.1056/NEJMra1308383.
3. Gaiha SM, Halpern-Felsher B. Public health considerations for adolescent initiation of electronic cigarettes. Pediatrics. 2020;145(Suppl 2):S175-S180. doi:10.1542/peds.2019-2056E.
4. Yuan M, Cross SJ, Loughlin SE, Leslie FM. Nicotine and the adolescent brain. J Physiol. 2015;593(16):3397-3412. doi:10.1113/JP270492.
5. Goniewicz ML, Knysak J, Gawron M, Kosmider L, Sobczak A, Kurek J, et al. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. Tob Control. 2014;23(2):133-139. doi:10.1136/tobaccocontrol-2012-050859.
6. Cichońska D, et al. The impact of e-cigarettes on oral health: a narrative review. 2024. PubMed PMID:39727461.
7. Sahni V. Impact of banning electronic nicotine delivery systems in India. JCO Glob Oncol. 2025. doi:10.1200/GO-25-00242.
8. Donaldson SI, Dormanesh A, Perez C, Majmundar A, Allem JP. Association between exposure to tobacco content on social media and tobacco use among adolescents and young adults: a systematic review and meta-analysis. JAMA Pediatr. 2022;176(9):878-887. doi:10.1001/jamapediatrics.2022.2198.
9. Lim CCW, Sun T, Hall W, Gartner C, Connor JP. Swipe to inhale: tobacco-related content on social media and susceptibility to tobacco use. Am J Prev Med. 2024;67(6):968-972. doi:10.1016/j.amepre.2024.07.020.
10. Kavuluru R, Han S, Hahn EJ. On the popularity of the USB flash drive-shaped electronic cigarette Juul. Tob Control. 2019;28(1):110-112. doi:10.1136/tobaccocontrol-2018-054259.
11. Soneji S, Barrington-Trimis JL, Wills TA, Leventhal AM, Unger JB, Gibson LA, Yang J, Primack BA, Andrews JA, Miech RA, Spindle TR, Dick DM, Eissenberg T, Hornik RC, Dang R, Sargent JD. Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults: a systematic review and meta-analysis. JAMA Pediatr. 2017;171(8):788-797. doi:10.1001/jamapediatrics.2017.1488.
12. Holliday R, Hong B, McColl E, Livingstone-Banks J, Preshaw PM. Interventions for tobacco cessation delivered by dental professionals. Cochrane Database Syst Rev. 2021;2(2):CD005084. doi:10.1002/14651858.CD005084.pub4.
13. Amalia B, Fuhr DC, Utama NH, Bintoro BS, Dorotheo U, Thabrany H, Ghani AC. Availability of e-cigarettes in India post-prohibition: a comprehensive compliance assessment of stores in three large cities. Tob Prev Cessat. 2020;6:47. doi:10.18332/tpc/123822.