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Pediatrician Knowledge, Attitudes, and Practice Related to Electronic Cigarettes

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A B S T R A C T

Purpose: Electronic cigarettes (e-cigarettes) have grown rapidly in popularity, creating concerns for pediatricians and families. Evaluating pediatricians' understanding of e-cigarettes is an important first step in effectively addressing these products in practice. This qualitative study assesses pediatricians' knowledge, attitudes, and current clinical practices related to e-cigarettes.
Methods: We conducted six focus groups with 37 pediatric clinicians in 2014. Groups were led by a trained facilitator using a semistructured discussion guide. Responses were recorded, transcribed, and coded to identify relevant themes.
Results: Pediatricians know that e-cigarettes generally contain nicotine and that adolescents and young adults are most likely to use them. However, most feel uninformed about the health effects of e-cigarettes and report wanting scientific evidence for safety or harm from credible sources. Pediatricians are skeptical of claims that e-cigarettes are safe, either for users or for those exposed to second-hand e-cigarette vapor or emissions. Participants noted that clinical conversations about e-cigarettes were rare, citing barriers including a lack of systematic screening, competing priorities during clinical visits, and, for some, limited confidence in their ability to address e-cigarettes during clinical encounters. No participants recommended e-cigarettes for cessation.
Conclusions: Pediatricians feel poorly informed about e-cigarettes and are concerned about their potential health effects. While clinical discussions about e-cigarettes are rare, recent increases in their use leaves many clinicians wanting guidance about what to say to patients and families.

IMPLICATIONS AND CONTRIBUTION

As electronic cigarette (e-cigarette) use rises and research on health effects continues, pediatricians are seeking guidance on how to address e-cigarettes in practice. This qualitative study assesses pediatricians' e-cigarette-related knowledge, attitudes, and practices in clinical encounters. This information may help develop clinician educational materials to prepare health providers to effectively address e-cigarettes.

Electronic cigarettes (e-cigarettes) are nicotine delivery devices that allow users to mimic some smoking behaviors without smoking combustible tobacco. E-cigarettes use battery-operated heating elements that produce a heated aerosol (or "vapor") containing liquid nicotine, chemical flavoring, propylene glycol, and other substances [1,2], which is inhaled and exhaled by users. In their short time on the market, e-cigarettes have increased in popularity: adult ever-use rose from 3.3% in 2010 to 8.5% in 2013 [3] and high school student current-use increased from 1.5% in 2011 to 13.4% in 2014 [4]. In 2014, youth used e-cigarettes more than any other tobacco products [4].

E-cigarettes have been marketed as safe alternatives to combustible tobacco cigarettes, despite a lack of evidence supporting these claims [5]. Researchers have identified significant health concerns: the nicotine in e-cigarettes is addictive [6] and

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has neurotoxic effects on adolescents' brains [7,8]. Animal data show that e-cigarette exposure harms lung growth and function [9] and is linked to behaviors associated with ADHD later in life [10]. Vaporized e-liquid produces numerous toxins and carcinogens [2], and their flavoring agents may not be safe for inhalation [11]. E-cigarettes expose nonusers to nicotine and other toxins through second-hand and third-hand exposures [12,13], pose a risk of nicotine poisoning [14], and contain heating elements that have caused fires and explosions [15]. Despite these concerns, some health officials believe that e-cigarettes have harm reduction potential if they were to be regulated and were to be used as a replacement for tobacco cigarettes [6]. However, most studies have found that e-cigarette users use them along with tobacco cigarettes [6,16], prolonging nicotine addiction and the damage done by tobacco smoke. And, while researchers have studied e-cigarettes as an aid to smoking cessation, particularly in cancer patients and others who struggle to quit [17], their efficacy for smoking cessation has not been demonstrated [6,16,18]. Thus, many in the scientific community urge caution around e-cigarette use until conclusive research on their ability to promote cessation and their health effects can be done.

Because of the popularity and uncertainty surrounding these products, pediatricians should be prepared to address e-cigarettes in practice. Pediatricians see a majority of the US child population [19], and preventive care guidelines advise addressing tobacco use and exposure during clinical encounters [20,21]. Recent American Academy of Pediatrics (AAP) policy calls for clinicians to address e-cigarettes during patient encounters [22]. Understanding pediatricians' knowledge, attitudes, and practices toward e-cigarettes is an important step in developing educational resources to help clinicians address these products in practice.

Methods

Recruitment

We recruited pediatricians who spent at least 20 hours/week in patient care and who were attending the October 2014 AAP annual meeting. The patient care criteria aimed to ensure that participants spent a significant portion of their professional lives in clinical settings, rather than in research or academia. Participants were recruited through AAP chapters, sections and councils, AAP listservs, other publications, and in-person in the conference exhibit hall. We aimed to enroll up to 60 participants to participate in these focus groups. In total, 57 pediatricians responded to our recruitment request: 11 did not meet eligibility criteria (6 did not spend 20 hours/week in practice, 3 were not attending the AAP annual meeting, and 2 had a scheduling conflict); of the 46 remaining, 9 did not attend the group. In total, 37 pediatricians participated.

Participants and procedures

Thirty-seven geographically diverse pediatricians participated in one of six focus groups, with 4–8 participants each. Participants were 76% female and had been practicing an average of 12 years: 65% worked in primary care, 30% in hospitals, and 5% in public health settings. Each group lasted 90 minutes and was led by a trained facilitator using a semistructured discussion guide. Discussion guides covered three key domains: (1) knowledge of e-cigarettes and their health effects; (2) perceptions and attitudes toward e-cigarettes; and (3) clinical practices and experiences related to e-cigarettes. Each domain was explored through broad topical questions (e.g., "What experiences have you had addressing e-cigarettes in practice?") and related prompts to get at specific information (e.g., "Has a patient ever asked you questions about e-cigarettes?" "Tell me about that conversation." "What advice did you give?"). Participants provided informed consent and received a $50 giftcard for participation. Study procedures were approved by the AAP Institutional Review Board.

Qualitative analysis

Focus groups were audio recorded and transcribed; transcripts and recordings were reviewed to ensure validity. Using Taylor-Powell and Renner's approach to content analysis [23], two members of the research team read all transcripts and created a codebook of themes that emerged from the groups. Larger themes were identified (e.g., "General knowledge about e-cigarettes") and broken into subthemes (e.g., "Flavors," "Terminology," "Components") as appropriate. After the preliminary codebook was created and reviewed by study team, two first-round coders independently coded each transcript, identifying additional themes as they emerged from the transcripts or combining themes as appropriate; when changes were made, the codebook was updated accordingly. After all transcripts had been coded, the research team resolved any coding disputes using a consensus process.

Results

Pediatrician knowledge of e-cigarettes

General knowledge. All participants reported some general knowledge about e-cigarettes, including details about structure, function, and the chemicals and toxins in e-liquid. Most (81%) knew that most e-cigarettes contained nicotine, 51% described them as addictive, and 43% noted they came in youth-friendly flavors.

- "It's very appealing to children, because they're pretty, they're colorful, [and] they taste good."

Most (84%) had some knowledge of e-cigarette laws: each group discussed local variations in laws and expressed concern that the FDA does not regulate e-cigarettes. All groups were aware that e-cigarettes could be purchased online, in convenience stores, and in mall kiosks. Only 27% knew how e-cigarette prices compared to tobacco cigarettes.

E-cigarette users. Most (84%) participants believed that teenagers, college students, and young adults were most likely to use e-cigarettes and that these groups were likely to believe e-cigarettes are safer than cigarettes. Some (19%) believed e-cigarettes were a gateway to other risk behaviors.

- [It's] "a style statement."
- "Most teenagers believe it's water vapor."
- "It's the perception that they're not smoking."

Each group discussed adult users as well; pediatricians felt that adults might use e-cigarettes if they were trying to quit