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“It’s not smoke. It’s not tar. It’s not 4000 chemicals. Case closed”: Exploring attitudes, beliefs, and perceived social norms of e-cigarette use among adult users

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Abstract

Background—Electronic cigarette (e-cigarette) use is rapidly increasing among adults in the U.S. The purpose of this qualitative study was to explore consumer perceptions about e-cigarettes, including knowledge, attitudes, beliefs and perceived social norms.

Methods—A total of 14 focus groups ($N = 116$) were conducted with current adult e-cigarette users in five U.S. cities from March through May, 2014. Focus groups were segmented by age (young adults aged 18–29 and older adults aged 30 and older) as well as by e-cigarette use status (exclusive e-cigarette users and non-exclusive e-cigarette users). Focus group discussions lasted approximately 60-min and were audio-recorded and transcribed; data were analyzed using a phenomenological approach.

Results—Participants expressed many positive attitudes towards e-cigarettes and simultaneously reported a lack of information and knowledge about the products. Focus group participants overwhelmingly felt as though the ingredients of e-cigarettes were likely less harmful than conventional cigarettes. Additionally, many described positive reactions from family and friends, especially when e-cigarettes were used in place of conventional cigarettes.

Conclusions—Findings from this qualitative study provide insight into consumer knowledge, attitudes and beliefs about e-cigarettes increasing our understanding of why and how they are

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Contributors

BC, SJ, GT, CT, JA, and DD contributed to the design of the study and data collection. All authors contributed to the analysis and interpretation of the qualitative data presented in this paper. All authors have read and approved the final manuscript.

Conflicts of interests

The authors have no conflicts of interests to report.

being used. Such information will help provide insight into the potential public health impact of these emerging products.

Keywords

Electronic cigarettes; Qualitative research; Tobacco use

1. Introduction

Electronic cigarettes (e-cigarettes), a form of battery-operated electronic nicotine delivery system (ENDS), belong to a heterogeneous class of products that typically deliver nicotine and other additives to users in an aerosol form. The diversity of e-cigarette device types available to consumers on the Internet and in stores is rapidly increasing, with an estimated 460 brands and 7700 flavors available as of January, 2014 (Zhu et al., 2014). Although the early e-cigarettes looked similar to conventional cigarettes and were intended to mimic cigarette smoking (Cahn and Siegel, 2011; Etter and Bullen, 2011), products have evolved and now vary in shape and size, ranging from the cigarette-like devices (“cigalikes”), to “tanks” or “mods”, which are larger and usually include a refillable “tank” for e-liquid (Farsalinos et al., 2014).

In recent years, awareness and use of e-cigarettes has surged among adults (King et al., 2015; Pepper and Brewer, 2013). From 2010 to 2013, e-cigarette awareness doubled from 40.9% to 79.7% and lifetime use among U.S. adults increased from 3.3% to 8.5% (King et al., 2015). Similarly, e-cigarette advertising expenditures have increased nearly three-fold across media channels, from \$6.4 million in 2011 to \$18.3 million in 2012 (Kim et al., 2014). Despite increases in e-cigarette advertising and use, currently e-cigarette products that do not make therapeutic claims are not regulated by the U.S. Food and Drug Administration (FDA). However, in April, 2014, FDA proposed regulation to extend its jurisdictional authorities (Federal Register, 2014) over unregulated tobacco products, including e-cigarettes. Under the current proposed rule, FDA would have the authority to regulate the manufacturing, marketing, and distribution of e-cigarettes.

The extant literature on consumer perceptions of e-cigarettes is limited and focuses primarily on self-reported reasons for e-cigarette use (Adkison et al., 2013; Dawkins et al., 2013; Farsalinos et al., 2014; Goniewicz et al., 2013; Pepper et al., 2014; Richardson et al., 2014; Vickerman et al., 2013; Zhu et al., 2014), which is only one aspect of consumer perceptions. Based on survey data, frequently endorsed reasons for e-cigarette use include: aiding in conventional cigarette smoking cessation (Dawkins et al., 2013; Farsalinos et al., 2014; Pepper et al., 2014; Zhu et al., 2014); the ability to use e-cigarettes anywhere (Dawkins et al., 2013; Pepper et al., 2014); the limited amount of secondhand “smoke” produced (Farsalinos et al., 2014); and consumer perceptions of less harm than conventional cigarettes (Etter and Bullen, 2011; Pepper et al., 2014; Zhu et al., 2014). A handful of studies have examined harm perceptions of e-cigarettes and have found that e-cigarettes are often perceived to be less addictive, as well as less harmful, than conventional cigarettes (Adkison et al., 2013; Choi and Forster, 2013; Pearson et al., 2012; Richardson et al., 2014). However, there is a lack of in-depth understanding of how consumers talk about the products and what they know or think about e-cigarette ingredients and health effects.

Moreover, research is needed to qualitatively explore social norms surrounding e-cigarettes as well as e-cigarette users' plans for future use, as these topics have rarely been explored.

Thus, the primary aim of this study was to explore adults' knowledge, attitudes, beliefs, and how perceptions of e-cigarettes compare to those associated with conventional cigarettes as well as perceived social norms and future plans for use. Using the Theory of Planned Behavior (Ajzen, 1991), which posits attitudes, beliefs, subjective norms and perceived behavioral control influence behavior, we designed this focus group study with adult current e-cigarette users to address the following research questions: (1) What are adult e-cigarette users' positive and negative attitudes towards e-cigarette use?; (2) What do adult e-cigarette users know about e-cigarette ingredients?; (3) What are adult e-cigarette users' beliefs about the health risks associated with e-cigarette use?; (4) To what extent do adult e-cigarette users report friends and family members' use of e-cigarettes, as well as how their friends and family view their use of e-cigarettes?; and (5) How do adult e-cigarette users describe their plans for future e-cigarette use?

2. Methods

2.1. Setting and participants

Focus group participants were recruited as a part of a broader qualitative study examining language, beliefs, and behaviors related to "other tobacco products" (separately for e-cigarettes, hookah, and cigars). This study used data from the e-cigarette focus groups collected from March through May, 2014, which were segmented by age group (young adults aged 18–29 and older adults aged 30 and older) and e-cigarette use status. All participants reported current e-cigarette use (use of an e-cigarette product in the past 30 days). In two of the focus groups, the recruitment screener language was modified to also include those who reported using an e-hookah in the past 30 days because the terms "e-cigarette" and "e-hookah" are frequently used interchangeably. Participants were classified as either exclusive e-cigarette users (used only e-cigarettes in the past 30 days) or non-exclusive users (used e-cigarettes and at least one other tobacco product in the past 30 days) in attempt to create homogenous groups for those who were dual/poly users of other tobacco products (in addition to e-cigarettes) versus those who identified as e-cigarette only users. All groups comprised a mix of individuals in terms of gender, race/ethnicity, and education levels.

Local market research firms provided facilities and recruitment for the focus groups, which were conducted in five U.S. cities: Washington, District of Columbia; Orlando, Florida; Providence, Rhode Island; Richmond, Virginia; and Los Angeles, California. Site selection was based on market scanner data as well as national data (where available) that indicated locations with relatively high prevalence across all three products of interest (e-cigarettes, hookah, and cigars) in the broader study. Using convenience sampling, the market research firms recruited study participants from their databases who met the requirements for inclusion in the specific study segments using a screener developed by study investigators. All study procedures were approved by the Institutional Review Boards at FDA and RTI International (the study contractor) as well as by the U.S. Office of Management and Budget.

2.2. Focus group procedures

Upon arrival, participants were rescreened to confirm eligibility and provided informed consent. Experienced moderators conducted the focus groups using a moderator guide informed by the Theory of Planned Behavior (Ajzen, 1991). Participants were asked to discuss why they used e-cigarette products, the benefits of using them, similarities and differences between e-cigarettes and other tobacco products, knowledge about ingredients, and beliefs about the harm of e-cigarettes. They were also asked to compare e-cigarettes to other tobacco products; to describe their friends and families' opinions and use of e-cigarettes; and to discuss if/how their attitudes, beliefs, and norms surrounding e-cigarettes compared to other tobacco products, including conventional cigarettes. Participants received a monetary incentive of \$75 for their participation. Focus groups lasted approximately one hour and were audio-recorded and professionally transcribed.

2.3. Data analysis

Two independent coders and reviewers coded verbatim transcripts from the focus group sessions using NVivo Version 9 software (QSR International, 2012). An initial set of codes and sub-codes was created corresponding to each topic of interest for this study. Using a phenomenological approach (Giorgi, 1997), additional codes were created for emergent themes and patterns were identified after review of the transcripts. All codes in the resulting "dictionary" were given operational definitions to enhance reliability and validity and aid in the coding process. Primary and secondary coders on the research team conducted a pilot test of the coding dictionary before completing all coding for the focus group transcripts, and the secondary coder coded a random sample of three of the 14 transcripts to ensure at least 80% agreement (Creswell, 2013), thus strengthening the reliability of the coding process. The coders discussed any changes to the coding dictionary throughout the process, and disagreements were discussed until consensus was reached. Results were examined across all focus groups as well as by age group (young adults versus adults) and by e-cigarette use status (exclusive versus non-exclusive e-cigarette use).

3. Results

3.1. Sample characteristics

Fourteen focus groups ($n = 116$) with young adult (aged 18–29) and adult (aged 30 and older) e-cigarette users with between seven to 10 participants per group were conducted. Seven comprised exclusive e-cigarette users while the other seven contained those who currently use e-cigarettes along with at least one other tobacco product. By design, the majority of focus groups ($n = 10$) were composed of young adult e-cigarette users compared to older adult e-cigarette users ($n = 4$).

Participant characteristics by city are provided in Table 1. Overall, the focus group sample had an average age of 30.4 ($SD = 3.4$, range 18–64), and was evenly split by gender (49% female, 51% male). Most participants had some college experience, either a two-year degree (46%), a college degree (28%), or a postgraduate degree (12%). The majority of participants identified as White (66%), whereas 15% identified as Black, 11% as Hispanic, 7% as Asian, and 2% as other.

3.2. Study findings

A summary of key findings, organized by theoretical construct, is detailed in Table 2.

3.3. Attitudes about e-cigarette products

Across all focus groups, attitudes towards e-cigarettes were mostly positive. Participants described several benefits to using e-cigarettes, such as the ability to use e-cigarettes as a method to reduce or quit smoking, the ability to augment conventional cigarette smoking in situations where smoking is not permitted, the perception of e-cigarettes as more socially acceptable than conventional cigarettes, and the availability of a variety of flavors. In terms of discussing positive experiences using an e-cigarette to reduce or quit smoking, one young adult said, *“Well, I just enjoy [e-cigarettes] as a hobby and a way to quit smoking, you know. It’s kept me off of cigarettes for a while.”* An older adult reiterated this notion and offered additional benefits to using e-cigarettes as a cessation tool, including health benefits and the absence of smell, saying, *“I feel better breath-wise. I feel better; I can smell things. . . The cigarette smell is nasty—I didn’t realize how bad I stunk, you know. It was bad. So that’s all the positives that I’ve seen [and] is what keeps me going with this, already in the last five, six months that I haven’t had a cigarette.”* This notion of e-cigarettes as a cessation tool was particularly prominent among older adults.

Negative attitudes towards e-cigarettes were typically expressed by participants who were dissatisfied with e-cigarettes as a replacement for conventional cigarette smoking. For example, one older adult said, *“I would rather not have to, to not have cigarettes in my life. I’d rather vape instead, but they still don’t quite do what cigarettes do for me, for some reason.”*

Among non-exclusive users, many described benefits to using e-cigarettes in settings where it was inconvenient to smoke cigarettes, such as during inclement weather or in places where smoking was not allowed, such as at work. For example, one young adult said, *“I use mine just when I’m somewhere that I can’t smoke. So, like, I keep it in my purse and if I’m somewhere that I can’t smoke or I know I’m not going to be able to smoke for hours then I’ll just keep it in my bag.”* A few adults noted that they felt some stigma—similar to that of conventional smoking—associated with e-cigarette use, and described a lack of comfort using e-cigarettes in places or setting where cigarette smoking is not allowed. More frequently, though, participants discussed the lack of stigma surrounding e-cigarette use in direct comparison to conventional cigarette smoking. For example, young adults often described e-cigarette use as being more socially acceptable compared to conventional cigarette smoking and enjoyed using e-cigarettes while consuming alcohol. Moreover, some young adults described conventional cigarette smoking as *“outdated”* compared to e-cigarette use. One young adult said, *“. . . If you want to smoke, you know, [an e-cigarette] is more like a trendy way versus [conventional] cigarettes, which I think these days are very like—taboo.”* This notion was not expressed among older adults.

The majority of participants expressed positive attitudes about e-cigarettes since they stated that these products allowed them to continue to enjoy the social aspects of smoking, including while consuming alcohol, without using conventional cigarettes. For example, one

participant said, “*Yeah, because when you drink I got to have [it], it’s like drinking and smoking, it goes together. I can’t drink without smoking, and I’m just trying to find a healthier way to still smoke.*”

3.4. Knowledge about e-cigarette ingredients and beliefs about health effects

Generally, adults were unaware of the ingredients in their e-cigarette products. Most participants knew that e-cigarettes commonly contain nicotine. A small number of participants indicated knowledge of varying concentrations of nicotine and flavorings in e-cigarette liquid. A few adults mentioned specific e-cigarette ingredients, such as propylene glycol or vegetable glycerin; however, the vast majority described a general lack of knowledge as to specific ingredients (with the exception of nicotine). For example, when prompted to discuss e-cigarette ingredients, one older adult said, “*I know that some people use like glycerin in them, you know, nicotine additives, I’m not sure exactly what. Some of them don’t have the ingredients labeled, so it’s hard to tell.*” For those who were using or have used e-cigarettes to quit smoking, there was overall agreement that despite not knowing actual ingredients, they believed that e-cigarette ingredients were less harmful than ingredients in conventional cigarettes.

Participants discussed a lack of knowledge when it came to the health effects of e-cigarette use, but expressed interest in increasing their knowledge in this area. As an illustration of this point, one older adult said, “. . . *I’m always skeptical when something first starts coming out, we don’t know all the side effects or all the problems with it until later on, like you know, 20 years from now, we’re going to find out that we all have this new cancer because we’ve been smoking [an e-cigarette].*” When prompted to discuss the health effects associated with e-cigarettes, participants primarily described side effects such as throat irritation, coughing, and lightheadedness. For example, one older adult said, “*[E-cigarettes] can make you vomit and light-headed.*” Long-term effects of e-cigarette use were less known, but when prompted to discuss long-term health effects participants often compared potential long-term health effects of e-cigarettes to those associated with conventional cigarette smoking. For example, one young adult noted, “*I mean, I think it could still lead to cancer, possibly.*” Another young adult said, “*I don’t know if they’re any better for you than cigarettes because I feel like there’s a lot of mystery behind them, but I hope [they are better for you than cigarettes].*”

Despite the lack of knowledge surrounding ingredients and health effects, participants overwhelmingly felt as though e-cigarettes are likely less harmful than conventional cigarettes. One young adult said, “*I mean, I hear [an e-cigarette] is healthier than a regular cigarette, so that’s the benefit.*” Additionally, one older adult said, “*I have thought of the long-term effects and I weighed it out and I’m like, ‘You know what? It’s not smoke. It’s not tar. It’s not 4,000 chemicals.’ Case closed.*”

3.5. Perceived social norms surrounding e-cigarette use

To better understand social norms, participants were prompted to discuss their friends’ and families’ use and views of e-cigarettes. The majority said they have friends who both use and do not use e-cigarettes, but that frequently their first time trying e-cigarettes was with

friends. A smaller number of adults discussed having family members who use e-cigarettes, but this was less common compared to friends' use. Generally, participants described positive reactions from friends and family members when they used e-cigarettes to reduce or quit smoking. A small number of participants noted that friends and family members were wary of their e-cigarette use and associated e-cigarette use with conventional cigarette smoking. For example, one young adult said, “. . . *Most of my friends are still pretty skeptical of it. I mean, it's still putting nicotine and vapor in your lungs one way or the other.*”

3.6. Plans for future e-cigarette use

Lastly, participants discussed plans for future e-cigarette use. Adults who reported using e-cigarettes to reduce or quit conventional cigarette smoking were less likely to say they would stop using e-cigarettes in the near or long-term, whereas those who use e-cigarettes “socially” report that they may terminate use in the next one to five years. For example, one young adult said, “*Now I do it because I'm in college and like everybody around me is doing it. If like people aren't doing it later then I probably won't be doing it.*” Many said they could envision a time when they may stop using e-cigarettes for specific reasons, such as if they start having children, if e-cigarette popularity decreases, if new studies suggest adverse health effects, and if they are able to progressively wean off all tobacco products. One young adult participant said, “*Hopefully I can get to the point where I don't need cigarettes or e-cigarettes, so I'll just eventually stop everything—but we'll see.*”

4. Discussion

This study explored adult e-cigarette users' attitudes, knowledge, beliefs, and perceived social norms surrounding e-cigarettes in five U.S. geographic regions. Qualitative analysis suggests that e-cigarette users generally have positive attitudes about e-cigarettes and simultaneously report a lack of information and knowledge about the products. Consistent with previous studies (Dawkins et al., 2013; Farsalinos et al., 2014; Pepper et al., 2014), adults in this study described three main reasons for use: (1) as a way to try to reduce or quit smoking conventional cigarettes, (2) to augment cigarette use in settings where smoking is not allowed, and (3) because the products are trendy. One notable difference between age groups emerged: young adult participants appeared to be more likely to use e-cigarettes because they were considered to be “cool” or “trendy” compared to older adults, who primarily described using e-cigarettes as a mechanism to reduce or quit smoking, which is consistent with a focus group study by Kong et al. (2014) that found e-cigarette experimentation among youth and young adults was associated with the perception of e-cigarettes having a positive social image. However, in comparing the exclusive versus non-exclusive users, few notable differences were observed—which may be due to the fact that these segments did not produce two discrete groups. That is, although e-cigarette users were segmented based on their current use of other products, it became apparent that the majority of e-cigarette users were all at different stages of use of other products—particularly conventional cigarettes (e.g., some exclusive users had recently quit cigarette smoking whereas some non-exclusive users were in the process of quitting smoking but had smoked in the past 30 days).

Overwhelmingly, participants across all focus groups described a lack of knowledge about e-cigarette ingredients and health effects, and expressed interest in learning about what was in e-cigarettes, suggesting an important opportunity for public health professionals. Despite the lack of knowledge, the majority of participants still believed e-cigarettes were less harmful than conventional cigarettes. Similarly, on study by Sanders-Jackson et al. (2014) examined young adults' knowledge of e-cigarette constituents in a U.S. web panel and found the majority of participants (57.3%) responded "Don't know/Refused" to whether they believe e-cigarettes contain toxic chemicals. Although many adults in the present study concluded that e-cigarettes were less harmful than conventional cigarettes, they were often wary due to the lack of information about e-cigarette health effects and at times were unsure as to whether e-cigarettes would ultimately be better for their health in the long-term. These findings are important in the context of recent surveys reporting that e-cigarette users and non-users believed e-cigarettes are less harmful than conventional cigarettes (Adkison et al., 2013; Choi and Forster, 2013; Farsalinos et al., 2014; Pearson et al., 2012; Richardson et al., 2014). In particular, the present qualitative data support these survey findings, but also provide an important nuance by revealing that judgments of reduced harm are often accompanied by uncertainty and skepticism. Moreover, adult e-cigarette users expressed great interest in learning about e-cigarette ingredients and health effects once this information becomes available.

Participants generally described positive reactions from their friends and family members surrounding their e-cigarette use, particularly when participants were using e-cigarettes to reduce or quit use of conventional cigarettes. Similar findings were reported by Pepper et al. (2014), who found that among a national sample of U.S. adults, the second most common reason for e-cigarette use was influence from friends or family members. Taken together, these findings suggest that social norms surrounding e-cigarette use have a potentially powerful influence on initiation and maintenance and that social networks are integral to prevention efforts.

As the diversity of e-cigarette device types available in the U.S. marketplace continues to grow (Zhu et al., 2014), understanding consumers' attitudes, beliefs, and perceived social norms surrounding these products is critical. The Theory of Planned Behavior (Ajzen, 1991) posits that these factors are important antecedents to behavior; thus, exploring these constructs can illuminate their influence on tobacco use behavior. Qualitative responses from adult e-cigarette users in this study suggest a combination of experiences that lead to positive attitudes about the products, including satisfying a need for nicotine among current and former cigarette smokers and experiencing social benefits of e-cigarette use with friends—particularly among young adults. Given that many participants expressed a lack of knowledge surrounding e-cigarette ingredients and health effects, health communications can address these knowledge gaps by providing information about what is known (and unknown) about the products. Future research should track how attitudes, beliefs, and perceived social norms evolve over time as well as among youth e-cigarette users, as their attitudes, beliefs, and norms surrounding e-cigarettes may differ substantially from that of adult users.

4.1. Limitations

Study findings should be interpreted in light of several limitations. First, this research has limited generalizability due to its qualitative nature. However, diverse perspectives were gathered by recruitment of e-cigarette users across five different geographic locations in the U.S. Future studies should explore other geographic regions, including rural and lower socioeconomic regions. Next, participants constituted a convenience sample of adult e-cigarette users in the cities selected for data collection, and primarily represented college-educated adults (86% of the sample had at least some college experience). The frequency and history of participants' e-cigarette use was not ascertained (all participants reported using an e-cigarette at least once in the past 30 days), and therefore there was likely a range in e-cigarette experience in the groups (e.g., those who have recently experimented vs. those who use the product regularly). Level of experience may impact attitudes and beliefs about the products, and future research can examine such nuances. Additionally, participant screening material did not include language on other e-cigarette product types, such as vape pens or e-pens, which may vary in terms of how consumers identify their product across geographic locations. Finally, the U.S. e-cigarette marketplace is rapidly changing, as are state and local policies, which may influence consumers' attitudes, beliefs, and knowledge. Accordingly, these findings reflect one snapshot in time.

5. Conclusion

Few studies have explored attitudes, beliefs, and perceived social norms surrounding e-cigarettes among adults in any depth. This study provided unique insight as to adult current e-cigarette users' experiences using these products. Overall, findings reveal positive attitudes towards e-cigarettes, particularly when used as a cessation tool, and benefits of use such as in social settings and while drinking alcohol—particularly among young adults. This study also demonstrated a lack of knowledge regarding e-cigarette ingredients and health effects, but interest in learning more. Despite this lack of knowledge, adult e-cigarette users overwhelmingly believed e-cigarettes were less harmful than conventional cigarettes. These findings underscore the importance of public health messaging to disseminate information about e-cigarette ingredients and health effects, and also highlight the interest among consumers to obtain more information about the products once this information becomes available. Lastly, findings from this research, which provide valuable insight on e-cigarette users' perceptions, can provide useful information to help inform FDA's evaluation of the public health impact of e-cigarettes—including understanding who uses e-cigarettes and how these products are being used.

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Table 1

Adult e-cigarette focus group participant characteristics by city (N = 116).

City	Overall		DC		LA		Orlando		Providence		Richmond	
	n	%	n	%	n	%	n	%	n	%	n	%
Total	116		26	22%	32	28%	17	15%	14	12%	27	23%
Age group												
18–29	80	69%	17	65%	32	100%	9	53%	4	29%	18	67%
>30	36	31%	9	35%	0	0%	8	47%	10	71%	9	33%
Average age (SD)	30.4	(3.4)	33.4	(12.1)	24.8	(3.1)	29.7	(7.3)	32.7	(11.9)	31.3	(13.0)
Gender												
Female	57	49%	13	50%	16	50%	6	35%	8	57%	14	52%
Male	59	51%	13	50%	16	50%	11	65%	6	43%	13	48%
Hispanic												
No	99	85%	22	85%	26	81%	14	82%	14	100%	23	85%
Yes	17	15%	4	15%	6	19%	3	18%	0	0%	4	15%
Race												
White	76	66%	18	69%	21	66%	14	82%	11	79%	12	44%
Black or African American	17	15%	5	19%	2	6%	0	0%	2	14%	8	30%
Hispanic	13	11%	2	8%	4	13%	3	18%	0	0%	4	15%
Asian	8	7%	2	8%	3	9%	0	0%	0	0%	3	11%
American Indian – Native Alaskan	1	1%	0	0%	0	0%	0	0%	1	7%	0	0%
Other	2	2%	0	0%	2	6%	0	0%	0	0%	0	0%
Education												
Less than high school	3	3%	1	4%	1	3%	0	0%	0	0%	1	4%
High school or GED	13	11%	1	4%	1	3%	2	12%	5	36%	4	15%
Some college or 2-year degree	53	46%	8	31%	9	28%	13	76%	6	43%	17	63%
College degree	33	28%	9	35%	16	50%	2	12%	2	14%	4	15%
Postgraduate degree	14	12%	7	27%	5	16%	0	0%	1	7%	1	4%
E-cigarette use status												
Exclusive ^d	54	47%	7	27%	25	78%	0	0%	4	29%	18	67%

	Overall		DC		LA		Orlando		Providence		Richmond	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Non-Exclusive ^b	62	53%	19	73%	7	22%	17	100%	10	71%	9	33%

Note: SD, standard deviation; DC, Washington, District of Columbia.

^a Has only used e-cigarettes in the past 30 days.

^b Has used e-cigarettes as well as at least one other tobacco product in the past 30 days.

Table 2

Summary of key findings by construct.

Construct	Key findings
Attitudes towards e-cigarettes/e-cigarette use	<ul style="list-style-type: none"> • Attitudes were mostly positive. • Positive attitudes involved: <ol style="list-style-type: none"> 1. the ability to use e-cigarettes to reduce/quit smoking or in places where smoking is not allowed 2. lack of social stigma compared to conventional cigarettes 3. perceived health benefits compared to conventional cigarettes • Negative attitudes involved: <ol style="list-style-type: none"> 1. dissatisfaction with using an e-cigarette as a replacement for conventional cigarettes 2. social stigma associated with using an e-cigarette 3. lack of comfort using the product in places where smoking was not allowed
Knowledge about e-cigarette ingredients	<ul style="list-style-type: none"> • Lack of knowledge about the ingredients in e-cigarettes. • Lack of knowledge of ingredients made e-cigarette users uneasy about using the products.
Knowledge/beliefs about health effects	<ul style="list-style-type: none"> • Generally unaware of the health effects of e-cigarette use. • Most believed e-cigarettes to be less harmful than conventional cigarettes.
Perceived social norms	<ul style="list-style-type: none"> • Most had both friends who use and do not use e-cigarettes. • Several reported their first time trying e-cigarettes was with friends. • When used in place of conventional cigarettes, friends and family members were generally supportive of their e-cigarette use. • A small number of adults felt friends and family members were wary of their use of the products.
Plans for future e-cigarette use	<ul style="list-style-type: none"> • Many reported plans to continue using e-cigarettes in the future. • Those using e-cigarettes to reduce or quit smoking reported plans to continue using the products over the next 1–5 years. • Those using the products socially hoped to stop using e-cigarettes in the long-term.