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“Smoking Revolution” A Content Analysis of Electronic Cigarette Retail Websites

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Abstract

Background—Electronic cigarettes (e-cigarettes) have been increasingly available and marketed in the U.S. since 2007. As patterns of product adoption are frequently driven and reinforced by marketing, it is important to understand the marketing claims encountered by consumers.

Purpose—To describe the main advertising claims made on branded e-cigarette retail websites.

Methods—Websites were retrieved from two major search engines in 2011 using iterative searches with the following terms: electronic cigarette, e-cigarette, e-cig, and personal vaporizer. Fifty-nine websites met inclusion criteria, and 13 marketing claims were coded for main marketing messages in 2012.

Results—Ninety-five percent of the websites made explicit or implicit health-related claims, 64% had a smoking cessation-related claim, 22% featured doctors, and 76% claimed that the product does not produce secondhand smoke. Comparisons to cigarettes included claims that e-cigarettes were cleaner (95%) and cheaper (93%). Eighty-eight percent stated that the product could be smoked anywhere and 71% mentioned using the product to circumvent clean air policies. Candy, fruit, and coffee flavors were offered on most sites. Youthful appeals included images or claims of modernity (73%), increased social status (44%), enhanced social activity (32%), romance (31%), and use by celebrities (22%).

Conclusions—Health claims and smoking cessation messages that are unsupported by current scientific evidence are frequently used to sell e-cigarettes. Implied and overt health claims, the presence of doctors on websites, celebrity endorsements, and the use of characterizing flavors should be prohibited.

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Appendix

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Introduction

Since 2007, use of electronic cigarettes (e-cigarettes) in the U.S.¹ has increased.^{2,3} E-cigarettes are battery-powered devices that heat a solution typically containing nicotine, generating a vapor for inhalation. Studies have found wide variability in product nicotine content⁴⁻⁶ and device quality.⁷ In 2009, the U.S. Food and Drug Administration (FDA) attempted to block importation and sale of e-cigarettes, claiming they were unauthorized drug delivery devices. The FDA was sued and in 2010 the U.S. Court of Appeals ruled that e-cigarettes should be regulated as tobacco products, unless marketed for therapeutic purposes.⁸ In April 2011, the FDA stated intent to exercise deeming authority over e-cigarettes; this has not been accomplished as of November 2013.⁹

Epidemiologic studies that show e-cigarettes are most frequently used by current smokers,^{2,3} but no association between use and quitting.¹⁰ However, users perceive the products as healthier than cigarette smoking and useful for smoking cessation.¹¹ Consumer perceptions of e-cigarettes' risks and benefits are important factors in determining uptake. Who adopts the product (e.g., youth, former smokers, or smokers trying to quit) and use patterns impact effects on population health. Tobacco product adoption patterns are driven and reinforced by tobacco industry marketing,¹² thus it is important to understand the marketing claims consumers encounter. The Internet has been, and remains, a main channel for marketing e-cigarette products,¹³ but mall kiosks, tobacco outlets, convenience stores, and pharmacies also sell e-cigarettes.¹ Websites make a wide variety of explicit and implicit marketing claims, including one site presenting the e-cigarette as a "smoking revolution."¹⁴ Claims of health benefits may undermine smoking cessation, and images or features that appeal to youth may encourage tobacco initiation or e-cigarette initiation.

To date, there are no published systematic analyses of e-cigarette marketing. This study describes the main marketing messages consumers are likely to encounter on e-cigarette branded websites. We systemically generated a sample of branded retail e-cigarette websites and coded the content describing the main advertising claims and products sold.

Methods

Sample Identification

In June–July 2011, Web searches were conducted using the following terms: e-cigarette, electronic cigarette, e-cig, and personal vaporizer, utilizing the U.S.-based versions of three search engines, (Google, Yahoo, and Bing), and one proxy search engine, Scroogle. Scroogle removes coded information from search algorithms (e.g., past search history or type of computer being used) used to personalize searches and inform retrievals. The Scroogle search engine can generate more consistent results from repeated searches, as results are not affected by past searches. (The Scroogle site is no longer in service and has not been replaced.)¹⁵ A preliminary review of results showed that Google and Scroogle retrieved very similar websites, as did Yahoo and Bing; therefore, to minimize redundancy, Scroogle and Yahoo were used for all subsequent searches. The first 50 retrievals for each term on each search engine were reviewed, identifying the primary purpose of the site, the

number of brands, type of products sold, and if e-cigarettes could be purchased directly from that website.

Of the 500 websites retrieved, 233 were retail sites (primary purpose to sell e-cigarettes), and 62 met all inclusion criteria. At the time of final analysis, three sites were defunct, leaving 59 sites in the final sample. Inclusion criteria were:

- Primary purpose of website is to sell e-cigarettes and accessories (e.g., e-cartridges, batteries, chargers/batteries, or nicotine solution)
- E-cigarettes may be purchased on website
- Website has a single primary brand identity (e.g., sells a specific e-cigarette brand)
- Website is not a multi-item portal for multiple brands of e-cigarettes
- Website does not sell other tobacco products (e.g., cigarettes or hookah) and/or other non-tobacco products
- Website is in English

Only single-brand retail websites were included, because these websites more clearly demonstrate the unique positioning for each brand of e-cigarette. The focus on a single brand is also easier for new consumers to review. The analysis was limited to websites that sold only e-cigarettes, excluding sites featuring marijuana smoking vaporizers and accessories. We did not exclude on the basis of country of origin provided the site was in the English language. Most websites in the sample had web addresses based in the U.S. ($n=46$), with 11 in the United Kingdom, one in India, and one in Australia.

Data Preservation

Although searches were conducted in June–July 2011, all sites were reviewed, recorded, and coded in February–December 2012. As websites are complex in structure and content changes frequently, we preserved all websites using the California Digital Library's Web Archiving Service or with Adobe Acrobat Pro X software.

Coding Guide Development and Coding Procedures

The primary author reviewed ten e-cigarette websites and drafted a coding guide, which was reviewed iteratively by both authors, refined, and retested to generate consistent definitions and examples. In 2012, three additional coders were trained by the first author (who was also a coder) and the group iteratively coded and reviewed websites until reliability was established. Fifteen websites were used for training, and reliability with Krippendorff's α ¹⁶ was calculated for four homepages (Krippendorff's $\alpha=0.84$) and four whole websites (Krippendorff $\alpha=0.79$). After reliability was established, 59 websites were divided among the four coders. Coders were permitted to examine the entire website for presence of themes and features.

Coding Instrument

Thirteen marketing claims were recorded as present/absent, and measures of prominence included the claim's presence on homepage, and whether it was depicted in text, in picture,

or in video. Table 1 presents the definition and examples of claims; pictorial examples of an e-cigarette and the claims are shown in Appendix A.

Website descriptives—Date of retrieval, uniform resource locator (URL), contact information, age restrictions, disclaimers, comparisons between e-cigarettes and cessation treatments, celebrities, doctors, and a product or brand-related club or group (e.g., Facebook or Twitter) were recorded.

Product information—We coded types of products sold as follows: e-cigarette, e-cigar, e-pipe, “starter kit” (a bundle of products including an e-cigarette with pre-filled cartridge, battery, and charger), disposable e-cigarette, liquid to refill e-cigarettes, cartridges, and replacement parts. The cost of the lowest-priced e-cigarette “starter kit” available on each website was recorded. Strength descriptors (e.g., “none,” “light,” “medium,” and “high”) were recorded with the corresponding amount of nicotine listed. The presence of several flavors was coded as present/absent.

Data Analysis

SPSS, v. 20 (IBM, Endicott NY) was employed for all analyses. We calculated the frequency and format (text, picture, and video) of each marketing claim. After analysis, authors iteratively reviewed and discussed examples of themes. Four major thematic content areas emerged: (1) health and cessation-related benefits; (2) avoiding smoking restrictions; (3) lifestyle benefits; and 4) product engineering claims.

Results

The most common messages were that the products are healthier, cheaper, and cleaner than cigarettes, can be smoked anywhere, can circumvent smoke-free policies, do not produce secondhand smoke, and are modern (Table 2). The most prominent claims (placed on the homepage and featured in pictures and videos) were health-related, that the products were cheaper than tobacco cigarettes, and that products could be smoked anywhere.

Health-related and Smoking Cessation-Related Claims

Health benefit claims were present on 95% of sites, such as statements about the absence of “tar” or “carcinogens” in the products (Table 2). Pictorial and video representations of doctors (Appendix A) occurred on 22% of sites. Claims of benefits using e-cigarettes to quit smoking were found on 64% of sites, frequently as testimonials, or in the frequently asked questions with questions such as “how can I use the e-cigarette to quit smoking?” (Tables 1 and 2). Claims about secondhand smoke frequently included statements that e-cigarettes emit “only water vapor” that is harmless to others (76%). Almost all sites compared the risks and benefits of e-cigarettes to tobacco cigarettes (98%), and about 25% of sites compared e-cigarettes to nicotine replacement therapy. Eighty-five percent of sites contained a disclaimer such as “products have not been approved by the FDA for smoking cessation” or products “may be hazardous for pregnant women or those sensitive to nicotine.” Disclaimers were frequently in small print at the bottom of the webpage and less prominent than health claims, which frequently used larger text, pictures, or video.

Avoiding Smoking Restrictions

Eighty-nine percent of websites claimed that e-cigarettes could be smoked anywhere, including smoke-free environments (e.g., offices, bars, and airplanes) or in response to smoke-free policies, and 70% depicted vapor, occasionally used by a person in an indoor environment.

Claims of Lifestyle Benefit

Almost all e-cigarettes offered flavors, most commonly tobacco and menthol/mint. Vanilla, chocolate, or other candy/dessert and coffee flavors were offered on a majority of sites; fewer offered spice or alcohol flavors (Table 3). One-third of sites offered novel “other” flavors, such as “Belgian waffle” and “Dr. Pepper.” The most common lifestyle claim was that the products are modern or technologically advanced (73%). Increased social status (e.g., “no getting treated like a social leper when you ‘light up’,” www.ecigarettesdirect.com; 44%), socializing (e.g., “The Green Smoke® e-cigarette truly is a social cigarette,” www.greensmoke.com; 32%), and romance (e.g., pictures of sexy women surrounding men, www.gamucci.net; 31%). These claims frequently added pictures and video to text.

In addition, 22% of websites referred to celebrities using the products or featured celebrity photos or endorsements. Multiple websites mentioned or displayed a video clip of a David Letterman interview with Katherine Heigl, where she discussed using an e-cigarette to quit smoking and used an e-cigarette during the interview (Appendix). One of the websites, www.SmokeStik.com, also offered three models of e-cigarettes endorsed by different celebrities whose charities benefitted from the product sales.

E-cigarettes were commonly advertised as cleaner than tobacco cigarettes (95%) and cheaper than tobacco cigarettes (93%), and cost savings were featured on homepages (76%) (Table 2). Sale prices or limited-time discounts, such as Memorial Day or Father's Day sales, were present on 80% of sites. Forty-three percent of sites claimed they were environmentally friendly, often using pictorial representations, such as a recycling logo, trees, and green leaves.

Products Offered

Almost all sites sold a starter kit, replacement parts, and solution cartridges for rechargeable models (one website only sold disposable e-cigarettes) (Table 3). The average price for a starter kit was \$45, (median price, \$39.95; range, \$9.70–\$129.00). E-cigarette cartridges and solutions were available in many strengths and nicotine levels, but strength descriptors did not correspond consistently to specific levels of nicotine (Table 3). Only products advertised as having no or zero nicotine matched a reported level of 0 mg of nicotine. Some of the strength descriptors present on the websites, such as ultralight, light, mild, and full-flavored, have been historically used by tobacco companies to describe cigarettes.

Website Characteristics

Almost all websites (98%) offered contact information in multiple formats, including telephone (76%), e-mail (54%), physical address (51%), online contact form (34%), and live

chat (5%). Twelve percent of sites had an age restriction, requiring the user to click on a box to state that they were over a certain age to view the site. None required proof or outside verification of age.

Discussion

To our knowledge, this is the first systematic analysis of retail website e-cigarette marketing. We found that health benefit was the most frequent claim. While this claim appeared on almost every website, there is little empirical evidence to substantiate it.¹⁷ Studies of e-cigarette users recruited online show that the product is perceived as less toxic than tobacco cigarettes and as a smoking-cessation device.^{11,18} However, little is known about the acute or long-term health risks of using e-cigarettes. One 2012 study found that acute (5-minute ad libitum) use of an e-cigarette resulted in increased pulmonary resistance among healthy smokers.¹⁹ Users in a large e-cigarette forum frequently reported mouth, throat, and lung irritation; a smaller amount of positive health effects such as improvement in asthma symptoms were also reported.²⁰ Moreover, the products are of variable quality, do not contain nicotine in the amount labeled on the package,^{4,6} and do not perform consistently as intended, even within brand.⁷ They are not regulated for safety and come with few or no instructions for use and/or warnings about potential risks.⁵ A few pilot studies indicated mixed results in terms of nicotine absorption^{21,22} (one funded by an e-cigarette company).²¹ However, a more recent study found that among experienced users using their own e-cigarettes (many with higher-voltage batteries than the cigarette-like models tested in previous studies), nicotine absorption was similar to that of cigarettes.²³

Claims of smoking cessation superiority are unsubstantiated, and studies suggest modest, if any, efficacy. For example, a 2013 study randomizing cigarette smokers to a 16-mg e-cigarette, a non-nicotine e-cigarette, or a 21-mg nicotine patch found unusually low abstinence rates for the nicotine patch, and no significant differences in continuous abstinence at 6 months between the three arms (7.3% for nicotine e-cigarette, 5.8% for nicotine patch, and 4.1% for non-nicotine e-cigarette).²⁴ A longitudinal analysis utilizing data from four countries demonstrated that although users reported using e-cigarettes to quit conventional cigarettes, there was no difference in quit rates between e-cigarette users and non-users.¹⁰ Moreover, in light of the legal rulings that e-cigarette products should be regulated as tobacco products, it seems the health and cessation claims on the sites should not be permitted.

Marketing that emphasizes using the product “anywhere,” especially where tobacco smoking is restricted, could lead smokers to add on e-cigarettes and potentially increase the amount of nicotine consumed. Such increased nicotine consumption and engagement in smoking-mimicking behavior could deter tobacco quit attempts. Moreover, using the device in a smoke-free environment may confuse enforcement of smoke-free policies and expose bystanders to unknown toxins. Volatile organic compounds, nicotine, and tobacco-related carcinogens are present in the e-cigarette vapor at lower levels than tobacco cigarettes.^{4,25,26} A recent study also found the presence of heavy metals, some of which were not present in cigarettes.²⁷

The few published epidemiologic studies demonstrate that e-cigarette use is most common among current smokers, and one study found that adolescents who report current smoking are much more likely to report being aware of, and wanting to try, e-cigarettes.^{2,10,28,29} These findings suggest that the total negative public health consequences could be increased by the use of these products, particularly if they encourage dual use instead of cessation or appeal to new users.³⁰

The lifestyle appeals, such as increased socializing, romance, and social status, may encourage uptake among persons of all ages; however, the presence of flavors and celebrity endorsements may be particularly likely to encourage youth uptake and experimentation. Youth and very young adults are more likely to use flavored tobacco products than adults.³¹ Celebrity endorsement has been used in the U.S. to advertise tobacco products and glamorize smoking.³² Exposure to smoking in movies, including smoking by a favorite celebrity, has been associated with youth and young adult smoking.^{33–35} The Master Settlement Agreement contains provisions designed to restrict this type of advertising with a section prohibiting co-branding of tobacco brands with non-tobacco brands, including a celebrity's "brand."³⁶ Similar to cigarettes, sponsorship of sporting events, such as the Blu branded racecar used at National Association for Stock Car Auto Racing events, could encourage uptake among youth and young adults.³⁷ The promotion of e-cigarette products with non-tobacco products and events, especially those with positive reputations among youth, could imply the products are appropriate for this population. Health-related and lifestyle appeals may also encourage initiation among young non-smokers, as they may convey that trying e-cigarettes is less risky and more socially appealing, which may ameliorate negative beliefs or concerns about nicotine addiction.

Since this analysis was completed, three trends warrant further attention to marketing: (1) an increase in the availability of disposable e-cigarettes in U.S. convenience stores; (2) cigarette companies acquiring e-cigarette companies; and (3) increased television advertising for e-cigarettes featuring celebrities. Disposable e-cigarettes are frequently sold in convenience stores for under \$10 each.³⁸ This significant decrease in the product price may encourage youth trial. Lorillard Tobacco Company purchased a major e-cigarette company, Blu, in April 2012,³⁹ British American Tobacco purchased CN Creative Ltd., a United Kingdom-based e-cigarette company,⁴⁰ and Altria and Reynolds American plan to market test their e-cigarette brands called Mark Ten and Vuse, respectively.⁴¹ These acquisitions signal the potential for an enormous expansion in the marketing budgets, reach, and sophistication of e-cigarette advertising. In light of the 2007 ruling⁴² that the major tobacco companies in the U.S. had engaged in racketeering and are still being monitored for potential efforts to defraud the public, it is important to monitor their marketing of these new products. Finally, although cigarette advertising has not been allowed on television for the past 30 years, e-cigarette companies (including the one owned by Lorillard Tobacco Company) have put "smoking" back on TV with commercials featuring people, including celebrities, actively using the products.^{43–45} Similar to cigarettes, e-cigarette commercials should be prohibited under current Federal Trade Commission regulations. This study has some limitations. Owing to time constraints, we could not analyze the thousands of hits retrieved by our searches or find all e-cigarette websites on the Internet during the study period. Our findings may not generalize beyond the sites analyzed. Similarly, since the e-

cigarette market is rapidly changing and websites often change, our analysis may not generalize to current websites. However, we took care in creating a methodology that would retrieve the most popular results likely to be encountered by a potential e-cigarette consumer. In addition, our analysis was limited to single-brand retail sites and it did not include the large number of retail sites that offer multiple brands of e-cigarettes. The coding does not reflect the full inventory of every possible piece of content appearing on these sites.

Conclusions

E-cigarette websites frequently contain unfounded health claims, smoking cessation claims, and marketing claims that could undermine smoke-free policies and appeal to youth. Whether or not studies demonstrate reduced harm relative to cigarette smoking for individual users, current marketing activities that encourage dual use of e-cigarettes and tobacco cigarettes and encourage new users to experiment with the product recreationally are not consistent with any harm-reduction approach. The Internet has been a main channel of dissemination of e-cigarette marketing and sales. However, only a small percentage of sites had an age restriction, which was only to click a box to state that the user is over a certain age. This easily circumvented age verification leaves open room for youth access and marketing exposure. Action must be taken to stop marketing that misleads consumers or entices a new generation of nicotine addicts.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Noel JK, Rees VW, Connolly GN. Electronic cigarettes: a new 'tobacco' industry? *Tob Control*. 2010; 20(1):81. [PubMed: 20930060]
2. Regan AK, Promoff G, Dube SR, Arrazola R. Electronic nicotine delivery systems: adult use and awareness of the 'e-cigarette' in the USA. *Tob Control*. 2011; 22(1):19–23. [PubMed: 22034071]
3. King BA, Alam S, Promoff G, Arrazola R, Dube SR. Awareness and ever use of electronic cigarettes among U.S. adults, 2010–2011. *Nicotine Tob Res*. 2013; 15(9):1623–7. [PubMed: 23449421]
4. Trehy ML, Ye W, Hadwiger ME, et al. Analysis of electronic cigarette cartridges, refill solutions, and smoke for nicotine and nicotine related impurities. *J Liq Chrom Rel Technol*. 2011; 34(14): 1442–58.
5. Trtchounian A, Talbot P. Electronic nicotine delivery systems: is there a need for regulation? *Tob Control*. 2011; 20(1):47–52. [PubMed: 21139013]
6. Goniewicz ML, Kuma T, Gawron M, Knysak J, Kosmider L. Nicotine levels in electronic cigarettes. *Nicotine Tob Res*. 2013; 15(1):158–66. [PubMed: 22529223]

7. Williams M, Talbot P. Variability among electronic cigarettes in the pressure drop, airflow rate, and aerosol production. *Nicotine Tob Res.* 2011; 13(12):1276–83. [PubMed: 21994335]
8. Circuit, DC. U.S. Court of Appeals. Vol. 627. *Sottera, Inc. v. Food & Drug Administration*; 2010. p. F.3d 891
9. Food and Drug Administration. Letter to Stakeholders: Regulation of E-cigarettes and Other Tobacco Products. www.fda.gov/newsevents/publichealthfocus/ucm252360.htm
10. Adkison SE, O'Connor RJ.; Bansal-Travers, M., et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *Am J Prev Med.* 2013; 44(3):207–15. [PubMed: 23415116]
11. Etter JF, Bullen C. Electronic cigarette: users profile, utilization, satisfaction and perceived efficacy. *Addiction.* 2011; 106(11):2017–28. [PubMed: 21592253]
12. USDHHS. Preventing tobacco use among youth and young adults: a report of the Surgeon General. USDHHS; Atlanta GA: 2012.
13. Ayers JW, Ribisl KM, Brownstein JS. Tracking the rise in popularity of electronic nicotine delivery systems (electronic cigarettes) using search query surveillance. *Am J Prev Med.* 2011; 40(4):448–53. [PubMed: 21406279]
14. Smoking Everywhere. www.smokingeverywhere.com.
15. Wikipedia, Scroogle. en.wikipedia.org/wiki/Scroogle
16. Hayes AF, Krippendorff K. Answering the call for a standard reliability measure for coding data. *Commun Methods Meas.* 2007; 1(1):77–89.
17. Flouris AD, Poulianiti KP, Chorti MS, et al. Acute effects of electronic and tobacco cigarette smoking on complete blood count. *Food Chem Toxicol.* 2012; 50(10):3600–3. [PubMed: 22858449]
18. Etter JF. Electronic cigarettes: a survey of users. *BMC Public Health.* 2010; 10(1):231. [PubMed: 20441579]
19. Vardavas CI, Anagnostopoulos N, Kougias M, Evangelopoulou V, Connolly GN, Behrakis PK. Short-term pulmonary effects of using an electronic cigarette impact on respiratory flow resistance, impedance, and exhaled nitric oxide. *Chest.* 2012; 141(6):1400–6. [PubMed: 22194587]
20. Alfi M, Talbot P. Health-related effects reported by electronic cigarette users in online forums. *J Med Internet Res.* 2013; 15(4):e59. [PubMed: 23567935]
21. Bullen C, McRobbie H, Thornley S, Glover M, Lin R, Laugesen M. Effect of an electronic nicotine delivery device (e cigarette) on desire to smoke and withdrawal, user preferences and nicotine delivery: randomised cross-over trial. *Tob Control.* 2010; 19(2):98. [PubMed: 20378585]
22. Vansickel AR, Cobb CO, Weaver MF, Eissenberg TE. A clinical laboratory model for evaluating the acute effects of electronic “cigarettes”: nicotine delivery profile and cardiovascular and subjective effects. *Cancer Epidemiol Biomarkers Prev.* 2010; 19(8):1945. [PubMed: 20647410]
23. Vansickel AR, Eissenberg T. Electronic cigarettes: effective nicotine delivery after acute administration. *Nicotine Tob Res.* 2013; 15(1):267–70. [PubMed: 22311962]
24. Bullen C, Howe C, Laugesen M, et al. Electronic cigarettes for smoking cessation: a randomised controlled trial. *Lancet.* 2013; 382(9905):1629–37. [PubMed: 24029165]
25. Schripp T, Markewitz D, Uhde E, Salthammer T. Does e cigarette consumption cause passive vaping? *Indoor Air.* 2012; 23(1):25–31. [PubMed: 22672560]
26. Goniewicz ML, Knysak J, Gawron M, et al. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tob Control.* 2013 In press.
27. Williams M, Villarreal A, Bozhilov K, Lin S, Talbot P. Metal and silicate particles including nanoparticles are present in electronic cigarette cartomizer fluid and aerosol. *PLoS ONE.* 2013; 8(3):e57987. [PubMed: 23526962]
28. Pepper JK, Reiter PL, McRee A-L, Cameron LD, Gilkey MB, Brewer NT. Adolescent males' awareness of and willingness to try electronic cigarettes. *J Adolesc Health.* 2013; 52(2):144–50. [PubMed: 23332477]
29. Pearson JL, Richardson A, Niaura RS, Vallone DM, Abrams DB. E-cigarette awareness, use, and harm perceptions in U.S. adults. *Am J Public Health.* 2012; 102(9):1758–66. [PubMed: 22813087]

30. Mejia AB, Ling PM, Glantz SA. Quantifying the effects of promoting smokeless tobacco as a harm reduction strategy in the USA. *Tob Control*. 2010; 19(4):297. [PubMed: 20581427]
31. Klein SM, Giovino GA, Barker DC, Tworek C, Cummings KM, O'Connor RJ. Use of flavored cigarettes among older adolescent and adult smokers: United States, 2004–2005. *Nicotine Tob Res*. 2008; 10(7):1209–14. [PubMed: 18629731]
32. Grana RA, Glantz SA, Ling PM. Electronic nicotine delivery systems in the hands of Hollywood. *Tob Control*. 2011; 20(6):425–6. [PubMed: 21659450]
33. Charlesworth A, Glantz SA. Smoking in the movies increases adolescent smoking: a review. *Pediatrics*. 2005; 116(6):1516–28. [PubMed: 16322180]
34. Tickle JJ, Sargent JD, Dalton MA, Beach ML, Heatherton TF. Favourite movie stars, their tobacco use in contemporary movies, and its association with adolescent smoking. *Tob Control*. 2001; 10(1):16–22. [PubMed: 11226355]
35. Song AV, Ling PM, Neilands TB, Glantz SA. Smoking in movies and increased smoking among young adults. *Am J Prev Med*. 2007; 33(5):396–403. [PubMed: 17950405]
36. Kline RL. Tobacco advertising after the settlement: where we are and what remains to be done. *Kan J Law Public Policy*. 2000; 9:4.
37. Felberbaum, M. Old tobacco playbook gets new use by e-cigarettes. Associated Press; New York: 2013. www.bigstory.ap.org/article/old-tobacco-playbook-gets-new-use-e-cigarettes
38. Martin, EJ. [March 26, 2013] On the E train. 2012. (online) Available: http://www.cspnet.com/sites/default/files/magazine/article/pdf/F8_CSP_0812.pdf.
39. BluCigs.. Blu Ecigs The Leading Electronic Cigarette Company Acquired by Lorillard. www.wiki.blucigs.com/1565/blu-cigs-news/blu-ecigs-the-leading-electronic-cigarette-company-acquired-by-lorillard/
40. Ralph, A. British American tobacco sees smokeless future with CN Creative. *The Times*; London England: 2012. www.thetimes.co.uk/tto/business/industries/consumer/article3636390.ece
41. Craver, R. Reynolds developing new smokeless products. *Winston-Salem Journal*; Winston-Salem NC: 2012. www.journalnow.com/business/article_cf223198-c21f-5b4e-8e7bc5fb6190dcad.html
42. Public Health Law Center. *U.S. v. Philip Morris Inc.. et al. No. 99-CV-02496GK (Final Opinion)*. U.S. District Court for the District of Columbia; 2006.
43. Sweeney, M. E-cigarette company to launch TV advertising campaign. *The Guardian*; London England: 2013.
44. BluCigs. Blu Electronic Cigarette TV Commercial. www.youtube.com/watch?v=9pxuBgfbid0
45. BluCigs. Rise from the Ashes TV Commercial. www.blucigs.com/StephenDorff/

Table 1

Definitions and text examples of each marketing claim. Visual image examples of each claim can be found at: <http://escholarship.org/uc/item/09g206qz.pdf>

Claim	Definition	Text example
Health related	Conveys health benefit, reduced harm, and/or no harm to one's health from using the product (e.g., references to "tar" and other compounds in tobacco that are harmful, "healthier," or "breathe easier," pictures of doctors and other health symbols)	"Amerismoke electronic cigarettes are tar free and toxin free. Unlike traditional cigarettes which contain over 3000 chemicals, with many of them being cancer-causing—Amerismoke is made up of around 3-4 ingredients. All of the ingredients used in Amerismoke are FDA* approved and every batch of e Liquid we produce gets thoroughly tested for contaminants and toxins." (www.amerismoke.com)
Cessation related	Conveys the product will help a tobacco smoker to quit smoking (e.g., explicit statements that the products can be used to quit smoking; use the product to cut down, switch completely, and never smoke again).	In the frequently asked questions section: "With all other alternative smoking products that are available on the market, you receive your dose of nicotine but they do not relieve your cravings for the actual process of smoking.... With Altimoff E Cigarette, quitting smoking is easier and less stressful than with any other product available on the market today." (www.usaecigarette.com)
Ability to smoke anywhere	Refers to ability to use the product anywhere or almost anywhere. Often includes lists of places where tobacco smoking is restricted: offices, planes, bars, and restaurants.	"SMOKE' ANYWHERE—EVEN AT THE PUB!" (www.liberro.co.uk)
Ability to circumvent smoke-free policies	Indicates that the products may be used to circumvent "smoke-free laws," "smoke-free rules," "clean indoor air regulations," or "smoking bans."	"The dream has become a reality. Imagine, once again, being free to smoke in your favorite nightclub, restaurant, or shopping center. Movie theaters, sporting events, taxis, and even airplanes are all free smoking zones as long as you have Cigarti electronic cigarettes. Virtually everywhere that smoking has been prohibited, Cigarti can go." (www.cigarti.com)
Products do not expose others to secondhand smoke	Conveys that other people will not be harmed or have negative health consequences from being exposed to the vapor, or that the vapor is "safe." Includes claims that the vapor is not like secondhand smoke and that products will not bother or annoy non-smokers.	"No secondhand smoke, only water vapor." (www.blucigs.com) "The electronic cigarettes are proven to be extremely beneficial to the well-being of the both the smoker and anybody standing nearby him as opposed to standard tobacco cigarettes. The e cig does not contain the 1000's of horrible chemical compounds. What a smoker of e cigarette inhales from it is actually vapours and there is no problem of [sic] second hand smoker." (www.steamlite.co.uk) "Since the 'smoke' is really water vapor, others will not be harmed with second hand smoke." (www.dragonvapor.com)
Cleaner than tobacco smoking	Depicts the product as cleaner to use than tobacco products (e.g., no ash, won't stain teeth, fingers, fingernails, or make hair smell).	"The E cig provides a clean and comfortable smoking alternative. With our smoking products there is no more stale tobacco smell on your hands, clothes, hair, or furnishings. Everything—including your car, home and office—can be free of ashes, dirty cigarette butts, and that lingering tobacco smell, thanks to the Ecig and electronic cigarette cartridge." (www.cigarti.com)
Cheaper than tobacco products and/or nicotine replacement therapies	Convey that using the e-cigarette product is cheaper or will save the user money and/or provide a better monetary value than using tobacco or nicotine replacement therapies (e.g., nicotine patch or gum).	"Affordable. Costs up to 90% less than real cigarettes." (www.amerismoke.com)
Environmentally friendly	Conveys the product is environmentally friendly, eco-friendly, and/or produces less waste than tobacco products (i.e., cigarette butts). Also images that signify environmental friendliness (e.g., recycling signs, clean earth pictures/graphics, leaves and trees, and lush, green outdoors imagery).	"We at Smoking Everywhere, Inc. consider the Smoking Everywhere Electronic Cigarettes as a GREEN Product, as also known as Eco-Friendly ... There are no cigarette butts to dispose, and therefore much less to recycle." (www.smokingeverywhere.com)

Claim	Definition	Text example
Products offer fire-safe alternative to tobacco cigarettes	Indicates the product is safer than tobacco products in terms of fire safety (e.g., “the product cannot light an accidental fire since there is no combustion.” “There is no fire or flame.”)	“The Smoking Everywhere Electric Cigarette is a completely nonflammable electronic device. There is no danger of fire from ordinary usage (It does contain a lithium battery which carries certain explosion risks if ignited), anything burning, and no substance in it lit.” (www.smokingeverywhere.com)
Increased ability to socialize	Indicates one will have increased friendship, increased ability to spend time with friends, especially nonsmokers, and increased opportunity to party or hang out in bars with friends by using the product. These claims might explicitly state the product is “social.”	“The leading reasons people use Gamucci include: freedom to smoke anywhere, social inclusion versus isolation, virtually odourless, non-flammable, convenient, and the lower cost of smoking.” (www.gamucci.com)
Increased social status	Associates the products with higher class, higher standing in society, looking “cool” or like a “trendsetter,” increased social acceptability, and/or that the product will lessen the stigma associated with smoking cigarettes (e.g., “using the product helps me to avoid dirty looks from non-smokers” or “to avoid the stigma of tobacco smoking” or “power smoker”) and luxury imagery like nice gloves or jewelry and wearing suits.	“...you'll find a rich variety of our e-cigarette product line which is stylish, trendy, and popular...Our smokeless cigarette kits will make you stand out in the crowd!” (www.premiuecigarettes.com)
Increased romantic involvement	Depict greater ability to find/keep a romantic partner or engage in romantic/sexual encounters. (e.g., get more dates, increased ability to attract opposite sex, pictures of models in sexy clothing, pictures of close/intimate interactions like kissing, cuddling, and hugging).	“Friends, family, and people you encounter likely find these odors offensive and avoid close contact. Even your love life can be affected by the presence of this ominous odor.” (www.modernvapor.com)
Modern, technologically advanced	Messages that describe the products, and using them, as modern and/or technologically advanced (e.g., state-of-the-art, new, hip, cool, revolutionary, modern, sophisticated, advanced, latest, cutting-edge, and futuristic)	“Electronic Cigarettes are a futuristic advance in science that look, feel, and taste like a tobacco cigarette and require the same mechanical motions.” (www.my7s.com)

* FDA=U.S. Food and Drug Administration

Table 2

Frequency of claims, location, and format on websites (N=59)

Claim	Frequency of appearance on websites (%)	Frequency of appearance on homepage (%)	Frequency of claim in text format (%)	Frequency of claim in picture format (%)	Frequency of claim in video format (%)
Health related	95	75	86	14	39
Cessation related	64	27	56	3	19
Ability to smoke anywhere	88	58	81	17	34
Ability to circumvent smoke-free laws	71	42	70	15	20
Products do not expose others to secondhand smoke	76	37	70	9	20
Cleaner than cigarette smoking	95	59	85	15	31
Cheaper than tobacco products and/or nicotine replacement therapies	93	76	78	29	17
Environmentally friendly	44	24	36	15	7
Products offer fire-safe alternative to tobacco cigarettes	75	32	71	3	10
Increased ability to socialize	32	17	20	12	7
Increased social status	44	25	17	29	7
Increased romantic opportunities	31	22	7	22	7
Modern, technologically advanced	73	44	63	10	15

Table 3

Products offered and characteristics on websites (N=59)

	Prevalence (%)	
Products		
Starter kit	98	–
Disposable e-cigarettes	46	–
Cartridges	90	–
Replacement parts	97	–
Nicotine solution/e-liquid/e-juice	53	–
E-cigar	20	–
E-pipe	5	–
Advertised nicotine strengths		Advertised nicotine content (mg)
None/No/Zero	76	0
Ultralight	17	6-11
Light	32	6-18
Low	56	3-12
Medium	59	6-18
High	59	8-24
Extrahigh	29	11-36
Mild	2	11
Full-flavored	14	16-24
Regular	9	12-16
Flavors		
Tobacco	95	–
Mint	97	–
Fruit	73	–
Candy	71	–
Coffee	61	–
Alcohol	10	–
Spice	14	–
Other	34	–