

ORIGINAL RESEARCH

Addiction, Cessation, & Harm Reduction: Primary Care Provider Knowledge & Perceptions of Electronic Nicotine Delivery System

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Aim: This study aimed to understand the knowledge and perceptions related to electronic nicotine delivery systems (ENDS) among healthcare providers (HCP) practicing in the family and general practice settings.

Methods: HCPs that practice in the family and general practice settings were recruited for this study using a web-based panel of US physicians. The final non-probability sample totaled 80 participants practicing in the family or general settings within the US. Each participant completed an online survey that included items on demographics, tobacco use, and knowledge and perceptions toward ENDS. Close-ended questions were analyzed using frequencies and cross-tabulations. The open-ended question was analyzed using an open-coding process.

Results: In the close-ended questions, over 75% of respondents agreed or strongly agreed that ENDS are addictive, and 45% of respondents agreed or strongly agreed that ENDS are helpful for quitting traditional smoked cigarettes. Over 33% of participants felt that ENDS were not only addictive but also useful for quitting traditional smoked cigarettes. Of those participants that responded to the open-ended question, nearly 25% believed electronic nicotine delivery systems were potentially useful as a cessation tool.

Conclusions: The finding that over one-third of participants perceived ENDS to be useful for cessation despite the product's addictiveness has meaningful implications for the provision of tobacco cessation support. Currently, the harms and benefits of ENDS use are not well understood. By offering ENDS as a cessation tool or harm reduction alternative to traditional tobacco products, HCPs may be subjecting patients to unknown harms from ENDS.

INTRODUCTION

Tobacco use is the leading cause of preventable death globally, killing approximately six million people each year worldwide.¹ In the United States (US) between 2005 and 2009, there were 480,000 annual premature smoking-attributable deaths.² Evidence-based tobacco control efforts coupled with an effective regulatory framework can prevent and reduce tobacco use as well as its associated morbidity and mortality. However, in recent years, efforts to reduce tobacco use have been complicated by the global emergence of alternative and frequently unregulated tobacco products such as electronic nicotine delivery systems (ENDS).

Introduced to US markets less than a decade ago, ENDS include a number of products such as electronic cigarettes (e-cigarettes) that aerosolize nicotine for user inhalation and they often, but not always, resemble traditional cigarettes. Emerging ENDS products are also available in an assortment of configurations, flavors, and nicotine concentrations. In the US, e-cigarette use tripled from 4.5 percent to 13.4 percent and 1.1 percent and 3.9 percent among middle- and high-school students, respectively, between 2013 and 2014.³ Between 2010 and 2013, e-cigarette use more than tripled from 9.8 percent to 36.5 percent among adult smokers.⁴ Recent research shows that youth and adults that never used conventional cigarettes have increasing prevalence of ENDS use, and some adults that were former smokers have begun using ENDS.^{5,6} The observed trends demonstrate a rapid increase of e-cigarette use among youth and adults. Couple this trend with the current regulatory gaps and this could translate into increases in US tobacco use.

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While the proliferation of ENDS may increase tobacco use, there have been increasing calls for more research on the potential value of the products as a tool for treating tobacco dependence or reducing harm among inveterate smokers. To complicate the issue further, the US Food and Drug Administration, which has authority to regulate ENDS, recently extended its regulatory authority to the manufacture, import, packaging, labeling, advertising, promotion, sale, and distribution of such products; however, rules clarifying ENDS marked for therapeutic purposes such as smoking cessation have only been proposed.⁷ The absence of guidance on the therapeutic use of ENDS fosters confusion not only among users looking to quit cigarette smoking but also in clinical practice settings where tobacco cessation support is offered.

Healthcare providers (HCP) are instrumental in guiding patients through tobacco cessation; however, only a limited number of studies have sought to improve the understanding of HCP knowledge and perception of ENDS, particularly as it relates to the provision of cessation services and addictiveness. These studies focused on single states within the US or included only close-ended questions.⁸⁻¹¹ The purpose of this pilot study is to assess knowledge, attitudes and perceptions about ENDS specifically among sampled family/general practice providers, which accounted for over 40 percent of practicing primary care physicians in the US.¹² Our pilot study is distinct because it included the US rather than specific states and centered on primary care providers, which the World Health Organization (WHO) considers as key to the provision of tobacco dependence treatment.^{13,14}

METHODS

Recruitment & Sample

Using a proprietary, web-based panel of targeted HCPs in the US from the Toluna Group, HCPs in the family/general practice setting were invited to participate in the study via email invitations. The study used a non-proportional quota sampling technique. 181 HCPs were invited to participate. Screening question about the HCP's type, gender, and geographic area of practice were asked to determine eligibility for study participation. Only those HCPs that indicated they provide services in a family or general practice setting were eligible to participate in the study. Regional quotas for participants were set to improve geographic diversity (Midwest, Northeast, South, and West) of the respondents; however, the sample is neither regionally nor nationally representative. As this was a pilot study, the minimum number of sampled units was $n=80$ with approximately equal proportion of women and men. The response rate was approximately 44 percent. The final non-probability sample consisted of physicians, nurses, physician's assistants, nurse practitioners, and other practitioners that provide services in general or family practices in the US. The anonymous surveys, which took approximately 10 minutes to complete for each respondent, were administered in August 2015.

Measures

The questionnaire contained 22 questions pertaining to demographic characteristics; healthcare specialty and occupation; number of hours worked and patients seen per week; tobacco use; knowledge and perceptions towards ENDS; and understanding of state and federal regulations of ENDS product. This study exam-

ined variables on demographic characteristics; tobacco use; and knowledge and perceptions towards ENDS.

Demographic Variables

The proprietary, web-based panel asked respondents their age, sex, race, ethnicity, and geographic location.

Tobacco Use

Ever, current, and daily tobacco use were assessed for all study participants. To promote harmonization with other tobacco surveillance activities, these items were aligned with the US National Adult Tobacco Survey and Global Adult Tobacco Survey measures on tobacco use.^{15,16} Ever tobacco use was measured by asking participants, "have you used tobacco at least 100 times in your entire life?" with response options of Yes, No, Prefer Not to Answer, and Don't Know. Current and daily tobacco use was measured by asking participants, "In the past 30 days, did you use any tobacco product on a Daily Basis, Less than Daily, or Not at All? Tobacco products might include but are not limited to cigarettes, cigars, chewing tobacco, snuff, or e-cigarettes." Response options for the current and daily tobacco use item included Daily, Less than Daily, Not at All, Refused, and Don't Know.

Knowledge & Perceptions toward ENDS

Knowledge and perceptions towards ENDS were assessed for all study participants. Knowledge and perception on the use of ENDS as a cessation tool was measured by asking participants, "In your opinion, electronic nicotine delivery systems are helpful for quitting traditional smoked cigarettes" with response options of Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree, Prefer Not to Answer, and Don't Know. Knowledge and perception of ENDS addictiveness was assessed by asking participants, "in your opinion, electronic nicotine delivery systems are addictive" with Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree, Prefer Not to Answer, and Don't Know.

In addition to the close-ended questions, all respondents were provided an opportunity to respond to the following free-response, open-ended question: "Is there anything else you would like to share regarding the use of electronic nicotine delivery systems among patients?" Response options included 1=Free Response and 997=Prefer Not to Answer. The open-ended question was considered an essential component of providing more robust data on the target population for several reasons: 1) it enabled respondents to elaborate on issues the researchers may not have considered when selecting close-ended measures for the study; 2) rapidly evolving tobacco product diversity and tobacco use profiles in the US could render extant close-ended measures on ENDS unreliable or invalid; and 3) limited ENDS-related research in the HCP population translates into an opportunity to develop new hypotheses and theories surrounding this populations' knowledge and perception toward these products.

Data Analysis

Data analyses were conducted using SAS 9.4 (SAS Institute Inc.; Cary, NC). Frequencies and other descriptive statistics for demographic variables were first examined. A cross-tabulation of the

variables assessing the knowledge and perception of ENDS usefulness as a cessation tool and ENDS addictiveness was then generated. Due to sample sizes less than five in several cells, a Fisher's exact test was performed on the cross-tabulated variables to assess independence of the two knowledge and perception variables of interest.

The open-ended question/item requesting additional information on ENDS use among patients was analyzed through a thematic analysis. Three investigators (BT, PN and RC) – based on review of the responses to the open-ended question – independently developed a master code list of all common themes. All responses were then independently coded by the investigators (BT and RC) using the master code list. Consistency across the raters was assessed, and inter-rater reliability Cohen's kappa coefficient was 82% indicating high agreement. Discrepancies were resolved through co-author consensus.

RESULTS

Demographics

For the n=80 participants, the mean age was 45.6 years (SD: 12.1), and the sample was distributed almost equally by gender. Four geographic regions were covered by the study: Midwest, Northeast, South, and West. The lowest and highest number of participants resided and practiced in the Northeast (n=13) and the South (n=28), respectively. Inclusion criteria restricted HCPs to the family/general practice setting, and participants from that setting included a variety of physician and non-physician practitioners. A majority of participants (n=48) were physicians. All participants were asked to provide information on ethnicity and race. For participants that responded to the ethnicity item, most were White (n=27) or Asian (n=8); however, a majority of respondents (n=44) chose not to respond to this item. Similarly, a majority of participants (n=77) chose not to respond to the race item. A majority of respondents (n=66) never used tobacco. Further details regarding demographic variables of respondents are presented in Table 1.

Knowledge & Perceptions of Electronic Nicotine Delivery Systems.

For the closed-ended question, over 75% of respondents (n=62) agreed or strongly agreed that ENDS are addictive, and 45% of respondents (n=36) agreed or strongly agreed that ENDS are helpful for quitting traditional smoked cigarettes (Table 2). Interestingly, over one-third of participants (n=27) felt that ENDS were not only addictive but also useful for quitting traditional smoked cigarettes. The relationship between the addictiveness and helpful for quitting variables was not statistically significant based on a Fisher's exact test (p=.3945).

For the open-ended question, a majority of participants (n=50) provided written responses (Table 3, page 14). Responses could typically be classified into one of several overarching themes: beliefs about ENDS as a cessation device, harm perceptions, the need for additional information, and general concerns about the products. In addition to the overarching themes, responses were further classified into 12 specific sub-themes. Of those 12 sub-themes, nearly one-fourth of respondents (n=12) indicated they

believe ENDS are potentially useful as a cessation tool. The second highest sub-theme identified was the belief that e-cigarettes are harmful (n=8). Of the overarching themes, the need for more information had the most consistent content/responses among sub-themes, and more than one-fourth of respondents (n=14) felt more information or research on ENDS is needed.

DISCUSSION

The increase in ENDS use in the US has troubling implications for public health and tobacco control. Because ENDS are still relatively new to the US market, it remains unclear whether these devices will be useful for tobacco cessation, lead to increases in tobacco use overall, or provide a gateway for non-users to initiate use of traditional tobacco products such as cigarettes. Recent research has shown odds of quitting cigarettes were 28 percent lower when comparing e-cigarette users to non-users.¹⁷ Conversely, other research has demonstrated that e-cigarette use alone may support tobacco cessation.¹⁸ Beyond the mixed signals from research, the absence of regulations around the therapeutic use of ENDS adds complexity to the provision of cessation support to patients. How do primary care practitioners navigate the increasingly complex nexus of ENDS research, regulatory uncertainty, and patient demand for ENDS?

Our pilot study demonstrated navigating that growing complexity might be difficult. With over one-third of respondents agreeing or strongly agreeing that ENDS are potentially helpful for quitting smoking despite being addictive, some providers seemed poised to ignore the uncertain harms of ENDS use. Although the reasons for this are unknown, themes identified as part of our open-ended assessment provide a possible explanation and avenues for further investigation. For example, many of the open-ended responses noted that ENDS are potentially useful as a cessation tool and may be a less harmful substitute for other tobacco products. Collectively, these themes coalesce around a common thread: harm reduction. The concept of harm reduction maintains there is a continuum of risks from tobacco products, and "a product is considered harm-reducing if it lowers total tobacco-related mortality and morbidity even though use of that product may involve continued exposure to tobacco-related toxicants."¹⁹

The harm reduction context raises an important question about respondents that agreed or strongly agreed ENDS are potentially helpful despite the addictiveness: do these HCPs believe they are protecting the health of tobacco using patients by recommending ENDS as a safer alternative? Our study did not specifically address this issue; however, efforts to normalize ENDS use could impact HCP perceptions about the harms and benefits of the product. Current marketing by companies like British American Tobacco (BAT) suggests the tobacco industry is making efforts to normalize ENDS as a safer, harm reduction tool. In an online video posted to the harm reduction page of BAT's website, the announcer remarks:

"Despite the well-known health risks and pressure to quit, millions of adults choose to smoke. It's time to look at alternatives. A new, more realistic and progressive route is needed. One where adult smokers looking to reduce the amount they smoke or quit, are given a choice of less risky products such as e-cigarettes."²⁰

TABLE 1:

Unweighted sample characteristics of family/general practice provider participants

Characteristic		All Participants, No. (%) or Mean \pm SD	Never Tobacco Use, No. (%) or Mean \pm SD	Ever Tobacco User, No. (%) or Mean \pm SD
Total		80 (100)	66 (82.5)	14 (17.5)
Mean Age \pm SD		45.6 \pm 12.1	45.6 \pm 12.2	45.4 \pm 11.9
Gender	Male	41 (51.2)	31 (47.0)	10 (71.4)
	Female	39 (49.8)	35 (53.0)	4 (28.6)
Region	Midwest	21 (26.3)	17 (25.8)	4 (28.6)
	Northeast	13 (16.2)	9 (13.6)	4 (28.6)
	South	28 (35.0)	25 (37.8)	3 (21.4)
	West	18 (22.5)	15 (22.7)	3 (21.4)
Healthcare Provider Type	Physician	48 (60.0)	40 (60.6)	8 (57.1)
	Nurse	8 (10.0)	7 (10.6)	1 (7.1)
	Physician's Assistant	6 (7.5)	4 (6.1)	2 (14.3)
	Nurse Practitioner	16 (20.0)	15 (22.7)	1 (7.1)
	Other	2 (2.5)	0 (0.0)	2 (14.3)

TABLE 2:

Relationship between healthcare providers' opinions of ENDS usefulness for quitting traditional cigarettes and ENDS addictiveness

In your opinion, electronic nicotine delivery systems are helpful for quitting traditional smoked cigarettes.	In your opinion, electronic nicotine delivery systems are addictive, No. (%)						
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know	Total
Strongly Agree	3 (3.75)	2 (2.50)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (6.25)
Agree	3 (3.75)	19 (23.75)	6 (7.50)	0 (0.0)	0 (0.0)	3 (3.75)	31 (38.75)
Neither Agree nor Disagree	5 (6.25)	10 (12.50)	2 (2.50)	0 (0.0)	0 (0.0)	1 (1.25)	18 (22.50)
Disagree	6 (7.50)	7 (8.75)	2 (2.50)	0 (0.0)	0 (0.0)	1 (1.25)	16 (20.00)
Strongly Disagree	2 (2.50)	2 (2.50)	1 (1.25)	0 (0.0)	1 (1.25)	0 (0.0)	6 (7.50)
Don't Know	1 (1.25)	2 (2.50)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.25)	4 (5.00)
Total	20 (25.00)	42 (52.5)	11 (13.75)	0 (0.0)	1 (1.25)	6 (7.5)	80 (100.0)

Note: Fisher's exact test indicated the two variables are independent ($p = .3945$)

TABLE 3:

Feedback from the participant regarding the use of electronic nicotine delivery systems among patients (n=50)

Theme		Example	n ^a
Noticed an increase in e-cigarette use		"I have seen a dramatic increase in the amount of e-cig usage."	2
Cessation Device	Potentially useful as a cessation tool	"They can be a useful tool in cessation programs for heavily addicted patients."	12
	E-cigarettes provide a substitute for other tobacco products	"I think it trades one vice for another..." or "Seems they are trading one type of nicotine addiction for another."	6
	Not useful as a cessation tool	"I believe e-cigarettes are useful in treating habit of holding something, social habit such as coffee with cigarette in the morning, but are not useful to treat real nicotine dependency."	4
	Patients have switched to e-cigarettes	"The number of traditional smokers in one's practice as a percentage has switched to e cigarettes."	1
Harm Perception	E-cigarettes are harmful	"Not safe, just as cigarettes aren't safe either. Both can lead to COPD and cancer."	8
	Any nicotine product is addictive	"I often think patient use this as a means to just place there nicotine addiction from cigarettes to the ecig."	6
	Patients perceive e-cigarettes to be less harmful than other tobacco products	"Patient's perception are that they are not harmful at all. Some patients even answer "no" when asked if they are a smoker even though they use e-cigs"	2
Information Needs	More information/research about e-cigarettes is needed	"I am concerned we will find long term consequences to their use we don't know about yet."	7
	Level of harm when compared to other tobacco products is not well understood	"Not sure if they are as harmful as cigarettes yet."	7
Concern	E-cigarettes are unregulated or need regulations	"Unregulated, dangerous, money-driven."	4
	E-cigarettes appeal to youth/adolescents	"These things seems to really entice teens however."	3

n^a = number of participants who identified this theme

The dissemination of industry-sponsored harm reduction messages that label ENDS as a less risky product than cigarettes could confuse HCPs and patients alike, particularly when these messages are viewed against the voluntary warning labels that appear on some ENDS:

"This product is not a smoking cessation product and has not been tested as such. This product is intended for use by persons of legal age or older...nicotine can increase your heart rate and blood pressure and cause dizziness...inhalation of this product may aggravate existing respiratory conditions. Ingestion of the non-vaporized concentrated ingredients in the cartridges can be poisonous."²¹

When mixed industry messages are considered in the context of increasing spending on traditional promotions such as advertisements,²² the prospect for confusion surrounding ENDS safety is greatly magnified.

Beyond messaging from the tobacco industry, patient knowledge toward and use of ENDS could muddle the provision of tobacco dependence treatment by HCPs. In the US, more than 65% of respondents in a large, longitudinal study of smokers reported ENDS were less harmful than traditional cigarettes.²³ The study also found that ENDS users smoked fewer cigarettes per day between the two most recent waves of the study.²³ While that decline may indicate harm reduction among certain tobacco users, other research demonstrated a

majority of adult smokers not only used traditional cigarettes and ENDS jointly²⁴ but also rejected ENDS as a satisfying substitute that entirely replaces cigarettes.²⁵ This emerging dual use has ramifications as it could deter tobacco cessation by creating multiple channels for sustaining nicotine dependence. Such findings, which provide limited insight into the efficacy of ENDS as a cessation or harm reduction tool, offer scant guidance to providers that need to understand the harms and benefits of ENDS use for patients.

LIMITATIONS

This study has several limitations. Although the non-probability sample covered multiple regions and the entire US, the sample size was small, non-random, and cross-sectional. As a result, the findings may not be generalizable beyond the study population. In particular, patterns of non-response for the race and ethnicity variables could meaningfully impact generalizability and the interpretation of the findings, limiting representation of ethnic diversity. In addition to limitations related to the study population and sample, the survey mode restricted further probing of the open-ended question. This prevented the researchers from exploring various themes and findings in detail. Lastly, ENDS use and the knowledge surrounding it have evolved rapidly in the last several years. This rapid evolution of trends and information means findings from ENDS research is particularly time-bound.

CONCLUSION

HCPs in the family/general practice setting are often responsible for guiding patients through the tobacco dependence treatment process. This process has changed dramatically over the last decade with the introduction of ENDS to the US market. Moreover, in the absence of regulations classifying ENDS as a cessation product, tobacco product diversity will continue to increase and transform the tobacco use profile of many patients. These rapid changes generate many unanswered questions about the harms and benefits of ENDS. However, these changes also generate questions about the usefulness of ENDS as a means of reducing tobacco-related morbidity and mortality. HCPs, sitting on the front lines of tobacco dependence treatment in the absence of regulatory guidance for ENDS, must often weigh the harms and benefits to patients without the benefit of full information. Our study found that HCPs want more and better information to help inform their approach to ENDS in the patient care environment. Beyond the implications for healthcare practice, this formative research improves understanding of ENDS knowledge and perceptions among HCPs in the US and serves as a foundation for future inquiry on this issue.

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ETHICAL APPROVAL

This study was approved by the Georgia State University Institutional Review Board (IRB) as Exempt Protocol Category 2 (IRB Number: H16010, Reference Number: 334592).

CONFLICTS OF INTEREST

The authors have no conflicts to declare.

REFERENCES

1. World Health Organization. WHO Report on the Global Tobacco Epidemic, 2013: enforcing bans on tobacco advertising, promotion, and sponsorship. 2013.
2. US Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.
3. Arrazola RA, Singh T, Corey CG, Husten CG, Neff LJ, Apelberg BJ, et al. Tobacco Use Among Middle and High School Students -- United States, 2011-2014. *MMWR: Morbidity & Mortality Weekly Report*. 2015;64(14):381-5.
4. King BA, Patel R, Nguyen KH, Dube SR. Trends in Awareness and Use of Electronic Cigarettes Among US Adults, 2010-2013. *Nicotine & Tobacco Research*. 2015;17(2):219-27.
5. McMillen RC, Gottlieb MA, Shaefer RMW, Winickoff JP, Klein JD. Trends in Electronic Cigarette Use Among U.S. Adults: Use is Increasing in Both Smokers and Nonsmokers. *Nicotine & Tobacco Research*. 2014.
6. US Centers for Disease Control and Prevention. Electronic Cigarette Use Among Middle and High School Students — United States, 2011-2012. *MMWR*. 2013;62(35):729-30.
7. US Food and Drug Administration. Vaporizers, E-Cigarettes, and other Electronic Nicotine Delivery Systems (ENDS) 2016 [updated June 3, 2016; cited 2016 June 5]. Available from: <http://www.fda.gov/TobaccoProducts/Labeling/ProductsIngredientsComponents/ucm456610.htm> - regulation.
8. Pepper JK, McRee A-L, Gilkey MB. Original article: Healthcare Providers' Beliefs and Attitudes About Electronic Cigarettes and Preventive Counseling for Adolescent Patients. *Journal of Adolescent Health*. 2014;54:678-83.
9. Kandra KL, Ranney LM, Lee JGL, Goldstein AO. Physicians' Attitudes and Use of E-Cigarettes as Cessation Devices, North Carolina, 2013. *PLOS ONE*. 2014;9(7).
10. England LJ, Anderson BL, Tong VTK, Mahoney J, Coleman-Cowger VH, Melstrom P, et al. Screening practices and attitudes of obstetricians-gynecologists toward new and emerging tobacco products. *American Journal of Obstetrics and Gynecology*. 2014;211(6).
11. Haber LA, Ortiz GM. Clearing the air: inpatient providers' knowledge, perspectives, and experience with electronic cigarettes. *Journal of hospital medicine*. 2014;9(12):805-7.
12. Agency for Healthcare Research and Quality. The Number of Practicing Primary Care Physicians in the United States: Primary Care Workforce Facts and Stats No. 1. 2010.
13. World Health Organization. Strengthening health systems for treating tobacco dependence in primary care. 2013.
14. World Health Organization. Global Action Plan for the Prevention of Noncommunicable Diseases 2013-2020. Geneva, Switzerland: 2013.
15. US Centers for Disease Control and Prevention. About GTSS [updated January 29, 2013; cited 2013 December 10]. Available from: <http://www.cdc.gov/tobacco/global/gtss/index.htm>.
16. US Centers for Disease Control and Prevention. National Adult Tobacco Survey [updated September 29, 2015; cited 2016 June 29]. Available from: http://www.cdc.gov/tobacco/data_statistics/surveys/nats/.
17. Kalkhoran S, Glantz SA. E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis. *The Lancet Respiratory Medicine*. 4(2):116-28.
18. Manzoli L, Flacco ME, Ferrante M, La Vecchia C, Siliquini R, Ricciardi W, et al. Cohort study of electronic cigarette use: effectiveness and safety at 24 months. *Tobacco Control*. 2016.

19. Stratton K, Shetty P, Wallace R, Bondurant S. Clearing the Smoke: The Science Base for Tobacco Harm Reduction: Executive Summary. 2001:189.
20. British American Tobacco. Harm Reduction: The Opportunity [cited 2015 December 9]. Available from: <http://www.bat.com/harmreduction>.
21. Nu Mark. MarkTen Product and Health Information 2015 [cited 2016 January 5]. Available from: <https://www.markten.com/additional-info>.
22. Kornfield R, Huang J, Vera L, Emery SL. Rapidly increasing promotional expenditures for e-cigarettes. *Tobacco Control*. 2015;24(2):110-1.
23. Adkison SEOC, R. J.; Bansal-Travers, M.; Hyland, A.; Borland, R.; Yong, H. H.; Cummings, K. M.; McNeill, A.; Thrasher, J. F.; Hammond, D. Electronic Nicotine Delivery Systems: International Tobacco Control Four-Country Survey. *AMERICAN JOURNAL OF PREVENTIVE MEDICINE*. 2013;44(3):207-15.
24. Weaver S, Majeed B, Pechacek T, Nyman A, Gregory K, Eriksen M. Use of electronic nicotine delivery systems and other tobacco products among USA adults, 2014: results from a national survey. *Int J Public Health*. 2015:1-12.
25. Pechacek TF, Nayak P, Gregory KR, Weaver SR, Eriksen MP. The Potential That Electronic Nicotine Delivery Systems Can be a Disruptive Technology: Results From a National Survey. *Nicotine & Tobacco Research*. 2016.



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