

Special Article – Tobacco and Smoking Cessation

E-Cigarette Counselling by Physicians and Dentists: Results from a National Survey

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Abstract

Introduction: Use of e-cigarettes has increased rapidly in recent years, yet little is known about how physicians and dentists counsel their patients about these devices. This paper presents results from the first national survey to report and characterize that counselling.

Methods: Respondents were recruited from a nationally representative dual-frame sample in 2014. Adults who had ever used e-cigarettes were asked if their doctor, dentist or child's doctor had discussed e-cigarettes in the past 12 months.

Results: Among the 3,030 adults who completed the survey, 523 (17.2%) had ever used e-cigarettes. Of those, 355 respondents (67.8%) had seen their doctor in the past year with 26 (7.3%) reporting the physician discussed the potential harm of e-cigarettes, and 20 (5.8%) reporting having discussed their potential benefits. Of 120 e-cigarettes ever users who had seen their child's doctor, 12 (10.0%) reported being counselled about the harms of e-cigarettes, and 11 (9.3%) reported being counselled about their potential benefits. Of 349 respondents who had seen their dentist in the past year, 6 (1.7%) reported that their dentist had discussed the harms of e-cigarettes and 13 (3.7%), reported being counselled about potential benefits. Rates were comparable when analysis was limited to current e-cigarette users or those who reported using both e-cigarettes and combusted tobacco.

Conclusions: Few physicians or dentists are discussing either the harms or benefits of e-cigarettes. These data suggest an opportunity to educate, train, and provide resources for physicians and dentists about e-cigarettes and their use.

Keywords: E-cigarettes; Electronic cigarettes; Counselling; Primary care

Introduction

E-cigarette use is increasing, and there are unknown and contested risks and potential benefits to these products [1,2]. Some researchers have suggested that these products have potential to help with smoking cessation even though the emerging scientific research on this issue suggests otherwise [3].

If randomized clinical trials with long-term follow-up ultimately demonstrate health benefits to smokers who switch from combustible tobacco products to e-cigarettes, potential risks remain. E-cigarettes appeal to children who would not otherwise have started using cigarettes, and might appeal to former smokers [4]. There are also concerns that e-cigarette users may be at an increased risk for initiating or transitioning to cigarette smoking [5]. Finally, increased use of these products could re-normalize smoking in society [1].

While data are still accumulating, the medical and public health community have tried to provide clinicians with information to guide counselling, but recommendations have been varied and not always consistent [6-8].

The public often relies on physicians to provide health information that can be trusted about a variety of health topics [9]. Even when scientific uncertainty exists, ethicists have argued that sharing this

uncertainty is autonomy promoting, and patients still express desire to receive information and guidance from clinicians [10]. Consequently, it is important for physicians to communicate accurate and reliable health information to patients to help them make informed decisions and mitigate potentially negative health behaviors, even when the full extent of risks and benefits are not definitively understood.

As a recent phenomenon, it is unknown what type of counselling about e-cigarettes, if any, physicians and dentists provide to their patients. This national survey is the first to report counselling provided by clinicians for e-cigarette use. In this paper, we explore whether clinicians were more likely to discuss either the harms or the benefits of these products, and whether any difference in counselling rates could be observed between different categories of clinicians.

Materials and Methods

The sample for this study was drawn from cross-sectional dual-frame surveys representing national probability samples of adults, administered in 2014. This approach has previously been published and showed reliability and national representativeness [11]. The design included a landline phone Random Digit Dialing (RDD) frame and an internet panel frame developed from a probability sample of U.S. adults. The internet panel frame was used in order to

Table 1: Characteristics of the 523 e-cigarettes ever users in a nationally-representative survey [1].

	Ever e-cig users (n=523)		E-cig current users (n=217)		Dual users (n=131)		Ever users with children (n=230)		Current users with children (n=95)	
	N	%	N	%	N	%	N	%	N	%
Female	233	44.6%	88	40.4%	57	43.1%	108	47.0%	35	36.7%
Race/Ethnicity										
White	363	73.2%	159	79.4% ²	104	82.7% ³	151	69.5%	67	77.0%
Black	49	9.9%	20	9.8% ²	16	12.3% ³	27	12.3%	12	14.2%
Hispanic	26	5.3%	11	5.6% ²	2	1.7% ³	14	6.4%	5	5.4%
Other	58	11.6%	11	5.3% ²	4	3.3% ³	25	11.8%	3	3.4%
Age category										
18-24y	128	24.6%	46	21.5%	10	7.3% ³	61	26.4% ⁴	26	27.7% ⁵
25-44y	226	43.4%	108	49.9%	72	55.7% ³	134	58.2% ⁴	58	61.3% ⁵
45-64y	142	27.2%	54	24.9%	42	32.0% ³	34	14.6% ⁴	10	11.0% ⁵
65y+	25	4.8%	8	3.8%	6	4.9% ³	2	0.8% ⁴	0	0.0% ⁵
Income										
Less than \$20,000	166	31.8%	61	28.1%	44	33.7%	75	32.8%	30	32.0% ⁵
\$20-40,000	241	46.1%	103	47.3%	60	45.6%	111	48.1%	50	52.9% ⁵
More than \$40,000	116	22.1%	53	24.6%	27	20.7%	44	19.2%	14	15.1% ⁵
Other characteristics										
Have seen their own MD in last year	481	92.1%	200	91.9%	121	92.0%	210	91.5%	88	92.6%
Have seen a dentist in last year	349	66.7%	135	62.2% ²	84	63.8%	167	72.6% ⁴	67	70.3% ⁵
Children in the household	230	44.1%	95	43.9%	54	41.0%	230	100.0%	95	43.9%
Parent of child <17 y.o.	164	71.2%	63	66.6%	42	77.9% ³	164	71.2%	63	66.6%
Among parents, number who accompanied children to MD in past year	121	73.9%	49	77.9%	28	66.6% ³	121	73.9%	49	77.9%
Among parents visiting child's MD, number who report child's MD warned about 2nd hand smoke	46	39.3%	15	33.4%	10	34.8%	46	39.3%	15	33.4%
Age group children										
0-4y	45	36.9%	16	32.8%	8	30.0%	45	36.9%	16	32.8%
5-12y	53	43.8%	22	44.6%	11	40.0%	53	43.8%	22	44.6%
13-18y	23	19.3%	11	22.7%	8	30.0%	23	19.3%	11	22.7%
Dual use status										
Current smoker, not current e-cig user	119	34.8%	0	0.0% ²			36	27.2%		
Current smoker, current e-cig user	131	38.4%	131	77.0% ²	131	100.0%	54	40.6%	54	74.9%
Recent former smoker, not current e-cig user	52	15.3%	0	0.0% ²			24	18.7%		
Recent former smoker, current e-cig user	39	11.5%	39	23% ²			18	13.6%	18	25.1%
Thinking of quitting e-cigarettes (n=169)			69	40.8%	46	44.2%	29	40.9%	29	40.9%

1) Except indicated otherwise, response rate between 92% and 100%.

2) p-value <0.05 for chi-square test between current users and former users. For categorical variables, this represents the global chi-square test.

3) p-value <0.05 for chi-square test between dual users and current users (non-dual users). For categorical variables, this represents the global chi-square test.

4) p-value <0.05 for chi-square test between ever users with and without children in the home. For categorical variables, this represents the global chi-square test.

5) p-value <0.05 for chi-square test between current users with and without children in the home. For categorical variables, this represents the global chi-square test.

reduce non-coverage issues arising from wireless substitution [11].

Surveys were administered to both frames from October to December in 2014. Data were weighted to adjust for age, race, gender, and region, as well as frame overlap among internet panel

respondents who also had a landline telephone, and were therefore also eligible for the RDD frame.

The results presented here are part of a larger national survey on tobacco product use and other factors conducted by the American

Table 2: Outcomes by selected characteristics of participants.

	Ever e-cig users (n=523)		E-cig current user (n=217)		Dual user (n=131)		Ever user with children (n=230) ⁴		Current user with children (n=95) ⁵	
	N	%	N	%	N	%	N	%	N	%
Counselled by own doctor about [1]:										
Benefits	20	5.8%	14	9.0%	12	12.7%	8	5.5%	5	7.5%
Harms	26	7.3%	12	7.6%	10	10.3%	7	4.5%	2	3.5%
Counselled by child's doctor about [2]:										
Benefits	11	9.3%	2	5.4%	1	5.1%	11	9.3%	2	5.4%
Harms	12	10.1%	2	4.8%	1	5.2%	12	10.1%	2	4.8%
Counselled by dentist about [3]:										
Benefits	13	3.7%	7	5.5%	5	6.0%	7	4.6%	5	7.4%
Harms	6	1.7%	2	1.8%	0	0.0%	2	1.3%	0	0.0%

1) Among adults who had seen their own MD in the last year. Response rate 74-78%.

2) Among adults who accompanied children to MD in the last year. Response rate 82-98%.

3) Among adults who had seen a dentist in the last year. Response rate 95-98%.

4) Response rate 65-69%.

5) Response rate 59-72%.

Academy of Pediatrics Julius B. Richmond Center of Excellence with funding from the Flight Attendant Medical Research Institute and the Truth Initiative. Details about the survey and results from its other components have previously been published [11,12]. As part of the survey, respondents were asked: "Have you ever used an e-cigarette, even one or two times?" The subset of participants who had ever tried e-cigarettes, thereafter referred to as "ever users" represents the sample for this study.

Participants were then asked: "How often do you now vape or use e-cigarettes? Every day, some days, or not at all". Respondents who reported using these products every day or some days were considered to be current e-cigarette users (the other ones being considered trial users). The participants were asked the following questions: "In the past 12 months, has your doctor (or dentist, or child's doctor) discussed the potential benefits (or harms) of e-cigarettes with you?" The survey also asked participants: "In the past 12 months, has your doctor (or child's doctor) discussed the potential harms of e-cigarettes inside of your home (or around children)?"

Outcomes of interest included reporting having been counselled about the benefits or the harms of e-cigarettes. Covariates that were analyzed included basic demographics, status as e-cigarette trial user versus current user, concurrent use of regular tobacco product and e-cigarettes (hereafter referred to as "dual use"), and having seen one's own doctor, child's doctor or a dentist in the previous 12 months. All covariates were obtained by self-report.

Statistical Methods

Chi-square analyses were performed to compare responses between risks and benefits for each type of clinician as well as to look at difference between clinician type for each benefit and harm. Subgroup analyses (for current e-cigarette users and dual users) were performed. Adjusted logistic regression model were not informative given the low prevalence of the outcomes of interest.

Results

3,030 adults completed the survey. In the RDD frame, of 1,739

eligible respondents contacted, 1,511 completed surveys (completion rate, 86.9%). For the internet panel frame, 2,699 panelists were randomly drawn from the probability panel; 1,518 responded to the invitation, yielding a final stage completion rate of 56.0%.

Among the overall sample, 523 (17.2%) had ever used e-cigarettes in the past. Current use of e-cigarettes was reported by 217 adults (41.5% of ever users and 7.2% of the overall sample). Interestingly, among the 2537 participants who had never tried e-cigarettes, 373 (14.7%) responded that they were thinking of trying e-cigarettes within the next 12 months. Ever use of e-cigarettes (21.4% vs 13.4%) as well as current use (8.8% vs 5.7%) was higher in the RDD panel. Participants who had ever used e-cigarettes were more likely to be male, younger, and have lower educational achievement than participants who had never tried e-cigarettes (Data not shown).

Among ever users, 92.1% had seen a physician in the previous 12 months, 66.7% had seen a dentist, and 73.9% of adults with children had seen their child's doctor. Weighted sample characteristics are presented in Table 1.

Among ever users, there was no difference in the proportion of respondents whose own physician had discussed the benefits versus the harms of e-cigarettes (5.8% vs 7.3%, p-value 0.40). Similarly, there was no statistically significant difference between the reported counselling rate about benefits versus harms by dentists (3.7% vs 1.7% p-value 0.10). Finally, 9.3% reported that their child's physician discussed the benefits of e-cigarettes compared to 10.1% who reported that their child's physician discussed the harms of e-cigarettes (p-value 0.85) (Table 2).

Chi-square analysis revealed no statistically significant difference between the three types of health providers in the probability of discussing the benefits of e-cigarettes (p-value 0.06). However, there was a difference in the probability of discussing the harms of e-cigarettes (p-value <0.001), with pair-wise comparison demonstrating that dentists were less likely to discuss the potential harms of e-cigarettes than physicians (p-value <0.001) and child's physicians (p-value <0.001). There was no statistically significant

difference between physicians and child's physicians discussing harms (p-value 0.35).

When analyzed separately, the subset of participants who reported being e-cigarettes current users (n=217), 200 (91.9%) had seen a physician in the previous 12 months, 135 (62.2%) had seen a dentist, and 49 of those with children (77.9%) had seen their child's doctor. In this subgroup of current users, 9.0% reported that their doctor discussed the benefits of e-cigarettes, while 7.6% reported the physician discussed the harms of e-cigarettes (p-value 0.65). Similarly, there was no difference in the reported rates of counselling about benefits vs harms for dentists (5.5% vs 1.8%, p-value 0.11). Finally, 5.4% reported that their child's physician discussed the benefits of e-cigarettes versus 4.8% who reported that their child's physician discussed the harms of e-cigarettes (p-value 0.89) (Table 2).

In this subgroup of current e-cigarettes users, chi-square analysis revealed no statistically significant difference between the three types of health providers in the probability of discussing the benefits of e-cigarettes (p-value 0.46), or the probability of discussing the harms of e-cigarettes (p-value 0.08).

We also examined whether having at least one child living in the household influenced the probability of receiving counselling. Among the ever users, the subgroup with children (n=230) did not have significantly different probability of being counselled by any group of clinicians when compared to the group without children (Table 2). However, among current users, the subgroup with children (n=97) was statistically less likely to have been counselled about the harms of e-cigarettes when compared to current users without children (Table 2). Interestingly, while 33.4% of current combusted tobacco users with children were counselled about the harms of tobacco smoke exposure by their child's doctor, only 4.7% reported counselling about the harms of using e-cigarettes around children (Table 1 & 2).

We also examined whether reporting concomitant current use of both e-cigarette and traditional tobacco products influenced the probability of receiving counselling. Among the 217 current users, 131 of them (77.0%) were also current smokers. Among those dual users, 121 (92.0%) had seen a physician in the previous 12 months, 84 (63.8%) had seen a dentist, and 28 of those with children (66.6%) had seen their child's doctor.

In this subgroup of current dual users, 12.7% reported that their doctor discussed the benefits of e-cigarettes, while 10.3% reported the physician discussed the harms of e-cigarettes (p-value 0.61). Similarly, there was no difference in the reported rates of counselling about benefits vs harms by child's physician (5.1% vs 5.2% p-value 0.98). Finally, a larger proportion reported that their dentist had discussed the benefits vs the harms of e-cigarettes (6.0% vs 0.0% p-value 0.03) (Table 2).

Discussion

To our knowledge, this is the first study investigating counselling behaviour of clinician with regards to e-cigarettes in the US general population. In this nationally representative survey, ever users of e-cigarettes were unlikely to report having been counselled about either the benefits or harms of e-cigarettes by their clinician. Generally, all clinicians were unlikely to discuss the effects of e-cigarettes and it

appeared that when they do so, they discuss harms and benefits at equivalent rate.

These findings are consistent with previous research showing that, in general, delivery of preventive health services by clinicians is lower than desirable, including for smoking cessation [13]. For example, the U.S. Preventive Task Force recommends that clinicians ask all adults about tobacco use and advise them to quit [14]. Yet, in 2012 using a nationally-representative survey, estimate of screening for tobacco use was at 23.2% and 43.6% for participants' own physicians and children's physicians respectively [15]. Our research on e-cigarettes is consistent with at least one other study, where, using a national physicians' survey, Pepper et al found that only 14% of physicians screened for e-cigarette use in adolescent patients [16].

Limitations of this study include self-report of e-cigarette use and counselling, and the cross-sectional nature of the survey. However, previous research has shown validity of using self-reported surveys for cigarette smoking status when compared to biochemical markers [17]. To our knowledge, a similar validation with electronic cigarette does not exist. While the study sample is large, the prevalence of e-cigarette use (17% ever tried e-cigarettes and 7.3% were current users) precluded the creation of a meaningful logistic regression model.

The findings from our exploratory study also raise many questions that were not meant to be answered by the current study design. For example, how clinicians balance counselling about the harms versus benefits of e-cigarettes in the context of someone who uses both combustible tobacco and e-cigarettes, or for the person who is an e-cigarette user but has recently quit combustible tobacco. However, it is clear that for both those populations of patients, bringing up the option of FDA-approved smoking cessation products would provide potential benefit [4,18]. Of note, cessation counselling for those who have never smoked combusted tobacco but have now initiated e-cigarettes would always be indicated because the risks clearly outweighs the benefits [19,20]. These risks relate to inhalation of ultrafine particulates, exposure to known toxins, contamination of the indoor environment, and becoming addicted to nicotine [21-23].

Despite these limitations, this first look will serve as a springboard for larger studies and more detailed analyses. The survey, by nature, does not provide insight as to the reason for the clinicians' decision to counsel or not. For clinician behaviours linked to other types of counselling, several barriers have been identified: lack of time, alignment of incentives, lack of knowledge and information, low perceived efficacy, and competing priorities [24]. Whether increasing publicity and knowledge about the potential harmfulness of e-cigarettes aerosol will lead to increasing counselling rates in the future is not known.

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