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Are long-term vapers interested in vaping cessation support ?

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ABSTRACT

Aims

We investigated whether long-term vapers were interested in vaping cessation support.

Design and Participants

Online survey in 2017 in long-term vapers (n=347) enrolled on e-cigarette and smoking cessation websites.

Measurements

Opinions on potential vaping cessation services.

Findings

Participants had been vaping for 4 years on average (standard deviation 1 year), most were daily vapers (96%, n=333), former smokers (88%, n=303), vaped nicotine-containing liquids (88%, n=305), reported being dependent on e-cigarettes (89%, n=308), and had no intention to stop vaping (66%, n=229). Few (10%, n=34) had already tried to stop vaping. Among those (n=118, 34% of 347) who intended to stop vaping, 27% (n=32) thought that a health professional could help them stop vaping, 33% (n=39) would visit a vaping cessation service if available in their neighborhood, 23% (n=27) would use nicotine medications to stop vaping, and if a vaping cessation website or smartphone app were available, 46% (n=54) would use them. In open-ended comments (n=94), participants reported that they did not see why they should stop vaping (n=37), in particular because vaping helped them quit smoking (n=17) and was less toxic than smoking (n=9), that smoking cessation aids had not worked for them and neither would similar aids help them stop vaping (n=6), and that they would stop vaping by gradually decreasing the nicotine content in their e-liquids (n=12).

Conclusions

Most long-term vapers had no intention of stopping vaping, but one quarter to one half of those who intended to stop were interested in using vaping cessation support.

BACKGROUND

Over 48 million people in the EU ever used e-cigarettes and 7.5 million use them currently (1). Some vapers use e-cigarettes during many years (2), but the health and behavioral effects of long-term vaping will not be fully documented before many years or even decades. Some vapers report being dependent on e-cigarettes, although dependence on most current models of e-cigarettes may be weaker than dependence on combustible cigarettes (3, 4). Results of the few published studies on vapers' intention to stop vaping vary widely across samples and countries, with proportions of vapers who intend to stop vaping ranging from 3-8% (3, 5, 6) to 60-70% (7, 8), with a range of intermediate values (9-11). These variations across studies may reflect either real differences or differences in the questions asked in the various surveys.

Reasons to stop vaping reported by former vapers are that they were just experimenting, that vaping was not as satisfactory as smoking, poor taste, poor quality of the product, cost, that vaping did not reduce cravings or did not help quit smoking, fears about the risks of vaping, that former smokers felt they did not need e-cigarettes anymore because they thought they would not relapse even if they stopped, and because former smokers relapsed to smoking and therefore stopped vaping (12-14).

There could be value in helping long-term vapers stop vaping and ensuring that by doing so, vapers, most of whom are former smokers (12), do not relapse to smoking. However, to our knowledge, there is no published information on whether vapers would be interested in using vaping cessation services, if such services existed. We conducted an online survey in long-term vapers to answer this question.

METHODS

Design and recruitment

In June 2017, we sent by e-mail an invitation to answer an online questionnaire to all participants (n=1565) in a previous online survey on e-cigarettes, who had provided a valid e-mail address and had agreed to be contacted by us for follow-up surveys. The previous survey (conducted in 2013-2016) covered vaping and smoking behaviors, opinions and satisfaction (2, 12, 15). The current survey was introduced as a follow-up survey on e-cigarette use and opinions, and vaping cessation services were not mentioned in the e-mail or in the questionnaire heading.

Measures

The questionnaire (http://www.webcitation.org/75mzRr8eM), in French, readable on any device, covered vaping and smoking behaviors, intention to stop vaping, and interest in hypothetical

smoking cessation services (Table 1). The questions, answered on Likert-tape scales, were devised specifically for this study. The questionnaire included a free text field labelled: “Comments and suggestions about a possible vaping cessation service”, and also free text fields for the brands of atomizers and batteries.

Analysis

We present descriptive statistics. We used the whole sample (n=347) as the denominator to calculate percentages, and medians and standard deviations were calculated on valid responses (no imputation for missing values). For free text entries, we created categories of responses and counted the number of occurrences in each category.

RESULTS

We obtained answers from 426 participants (27% of 1565), including 347 current vapers and 79 former vapers (19% of 426). A comparison of respondents and non-respondents is shown in an online supplementary file. We included the 347 current vapers only in the analyses. The median percentage of missing responses was 1.2% (quartiles 0.3% and 5.5%). The 347 participants were middle-aged and they lived in France (65%, n=226), Switzerland (22%, n=78), Belgium (7%, n=23) and other countries (6%, n=20). Most were former smokers (88%, n=303), who had quit smoking for 4 years on average (25^{th} and 75^{th} percentiles: 2 and 4 years). Participants had been vaping for a median of 4 years (25^{th} and 75^{th} percentiles: 3.5 and 4.3 years). Most were daily vapers (96%, n=333) and vaped nicotine-containing liquids (88%, n=305). The median nicotine concentration in their e-liquids was 6 mg/ml (25^{th} and 75^{th} percentiles: 3 and 10 mg/mL).

Most participants (92%) used third generation devices (i.e. refillable tanks with large batteries) and 8% used second generation devices (e.g. Ego). The most frequently used devices were Eleaf istick (n=73), Kanger Kbox or Evod (n=16), Joyetech Evic (n=15); Joyetech Ego (n=14); Vision Spinner, Wismec, Eleaf Pico, and Smok Alien (n=10 each). The most frequently used atomizers were Aspire Nautilus (n=22), Eleaf Melo (n=16), Kangertech Subtank (n=14), Kangertech Protank (n=12), Wotofo Serpent (n=12), SvoëMesto Kayfun, Eleaf GS, and Joyetech Cubis (n=10 each).

Most participants reported being dependent on e-cigarettes (89%), and 64% said they experienced mood disturbances whenever they did not use nicotine for one or more days. Most (66%, n=229) had no intention to stop vaping, few (10%, n=34) had already tried to stop vaping, and among those who had tried, the median duration of the most recent vaping cessation attempt was 12 days (25^{th} and

75th percentiles, 1 day and 6 months). Less than half the participants (44%, n=138) thought they would succeed if they tried to stop vaping (Table 1).

When asked which of the following vaping cessation services they would be most willing to use, participants said they would use none of them (n=170, 49% of 347), a service available on the Internet or on smartphones (22%, n=75), face-to-face clinical services (18%, n=63), and an additional 8% (n=31) would you both clinical and online services.

Among those who intended to stop vaping (n=118, 34% of 347), 46% (n=54) would use a vaping cessation website or smartphone application if such services were available, 33% (n=39) would visit a vaping cessation service if such a service was available in their neighborhood, 27% (n=32) thought that the support of a health professional (i.e. information, advice, follow-up, prescription of a medication if necessary) could help them stop vaping, and 23% (n=27) would use nicotine medications (e.g. patch, gum) to stop vaping.

Free text entries

In open-ended comments on potential vaping cessation services (provided by 94 people), participants reported that they had no intention of stopping vaping and did not see why they should do so (37 comments, e.g. “Why do you want me to stop vaping?”, “Stopping vaping does not make sense for me, I was a heavy smoker and the road towards cessation goes through vaping”, “I stopped smoking and it is out of the question that I also stop vaping”, “I still smoke 5 cigarettes per day instead of 45 before I started to vape, and I do not see any way out of vaping”), in particular because vaping had helped them quit smoking (17 comments, e.g. “Without the e-cigarette I would still be smoking”, “I stopped smoking with the e-cigarette and I don’t need help”, “I will stop vaping when I am ready, for me stopping smoking was already an enormous step”, “My priority is to stop smoking and I will perhaps stop vaping later”), and because vaping was perceived as less toxic than smoking (9 comments, e.g. “95% less dangerous than tobacco”, “The risk-benefit ratio of vaping seems very interesting to me”). Some said that they would stop vaping by themselves by gradually decreasing the nicotine content of their e-liquids (12 comments, e.g. “I continuously decrease the level of nicotine in my liquids until I stop vaping”), that smoking cessation aids had not worked for them and neither would similar aids help them stop vaping (6 comments, e.g. “These services did not help me stop smoking, only vaping helped me stop, I will not use this sort of support again”), that they did not need any help to stop vaping (5 comments, e.g. “I do not need vaping cessation support, if I stop vaping some day, it will occur naturally), that their e-liquid did not contain nicotine (5 comments, e.g. “I vape only occasionally and without nicotine”), that vaping cessation should not be medicalized (1

comment) or divert resources from smoking cessation services (2 comments: “Rather put 100% of your resources to help people stop smoking”, “You should concentrate your efforts on smoking cessation”), and that stopping vaping would put them at risk of relapsing to smoking (2 comments : “It is better for me not to stop vaping, otherwise I might relapse to smoking”, “Encouraging people to stop vaping could cause relapses to smoking, It is more urgent to stop smoking than to stop vaping”).

DISCUSSION

In this group of long-term vapers who were also long-term ex-smokers, relatively few participants intended to stop vaping. This result is in agreement with some (3, 5, 6, 11), but not all (8) of the few published studies on vapers’ intentions to stop vaping. Many vapers in our sample did not understand why they should stop vaping. This opinion should be taken into account by clinicians and prevention experts, who should remember that some vapers may be better off vaping than stopping vaping, if stopping puts them at risk of relapsing to smoking. Among participants who intended to stop vaping, one fourth to one half were interested in vaping cessation help or support, a point that was not previously documented. Given the large number of current vapers (7.5 million in the EU) (1), this could translate into substantial numbers of potential users of such services, if these services were created. However, the ideas of offering vaping cessation support or medicalizing vaping cessation was met with some skepticism. Some participants noted that vaping helped them quit smoking, whereas other smoking cessation methods failed. The participants’ perception that smoking cessation aids are not very effective is realistic, as intensive counseling by a physician in conjunction with medications increase smoking cessation rates by only a few percentage points above control conditions (16, 17). It will be challenging to develop vaping cessation aids that are effective, do not put vapers at risk of relapsing to smoking, and are sufficiently attractive to enroll an audience large enough to justify the cost and effort of developing and implementing these services. Services available online and on smartphones would probably be preferable to clinical services, given the probable difficulty of attracting enough local participants to justify the opening of a specialized clinic. Vaping cessation services should not divert resources from smoking cessation services, which remain a priority given the relative risks of vaping and smoking.

The proportion of dual users (i.e. vapers who also smoke) was smaller in this sample than in representative samples of vapers (1). Clinicians and caregivers who work in stop smoking services should be knowledgeable about vaping and should be able to advise single and dual users about the relative risks of vaping and smoking, and about how vaping can help them stop smoking. This will require thousands of health professionals to receive training.

Strengths of this study include originality, new insights, and an international sample of long-term vapers. However, this study was conducted in a self-selected sample of respondents to a prior online survey on e-cigarettes, originally enrolled among visitors of smoking cessation and e-cigarette websites. We previously found that, compared with vapers enrolled on neutral websites, vapers enrolled on e-cigarette websites were more likely to be former smokers and to be daily users and long-term users of e-cigarettes (12). In addition, respondents to the 2017 survey differed from non-respondents (they vaped more frequently and were more satisfied with vaping, see online supplementary file). Thus, this sample was not representative of all long-term vapers. Also, the questionnaire was very brief, but this was intended as an exploratory study. Finally, the interest in online vaping cessation services is necessarily higher in this online sample than in the general population of vapers, some of whom don't have access to the Internet or smartphones.

We conclude that most participants in this online survey of long-term vapers had no intention to stop vaping, but a quarter to a half of those who intended to stop were interested in using vaping cessation services. Given the large number of vapers in the population, this could translate into a sizeable number of potential users, in particular for mobile apps or online services.

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Table 1. Characteristics of 347 long-term users of e-cigarettes enrolled on the Internet, 2017

	Median or %	Range	Standard deviation	N
All participants				347
Men, %	58			201
Age, median	48	21-73	10	
Daily e-cigarette users (the rest = non-daily users), %	96			333
Use nicotine-containing e-liquid, %	88			305
Nicotine concentration in e-liquid, mg/mL, median	6	0-20	5	
Monthly spending on e-cigarettes, Euros, median	30	0-1000	68	
Smoking status, %				
Daily smoker	7			24
Non-daily smoker	5			18
Former smoker	88			303
Never smoker	0			1
Probable that will still vape in 6m from now, yes, %	79			274
Do you intend to stop using e-cigarettes? %				
Strongly decided to stop	3			11
Plans to stop	31			107
No intention to stop	66			229
Sure to succeed if they decided to stop vaping (the rest = not sure), %	44			138
Are you dependent on the e-cigarette? Strongly to somewhat dependent, %	89			308
Dependence on e-cigarettes, 0-100 scale, median	65	0-100	30	
Minutes to first puff of the day on their e-cig, median	15	1-600	64	
Already tried to stop using the e-cigarette, %	10			34
In those who tried (n=34), duration of most recent attempt to stop, days, median	12	1-1825	325	
Experience mood disturbances when they do not use nicotine during one or several days (a list of nicotine withdrawal symptoms followed), %	64			191
In former smokers :				303
Duration of smoking abstinence, months, median	48	0-120	19	
In current smokers (dual users) :				42
Cigarettes per day, median	5	1-25	6	
Minutes to first cigarette of the day, median	60	3-720	189	
In current vapers who intend to stop vaping:				118
Think that a health professional could help them stop vaping, %				
Yes, absolutely	4			5
Yes, possibly	23			27
No + Don't know	73			86
Would visit a health professional to help them stop vaping, if available nearby, %				
Yes, absolutely	6			7
Yes, possibly	27			32
No + Don't know	67			79
Would use a website or smartphone app that provides support to stop vaping, %				
Yes, absolutely	9			10

Yes, possibly	37	44
No + Don’t know	54	64
Would use nicotine medications to stop vaping, %		
Yes, absolutely	8	9
Yes, possibly	15	18
No + Don’t know	77	90

Supplementary file:

Predictors of participation in the follow-up survey

Characteristics at baseline, in 2013-2016:	Responders in 2017	Non-responders in 2017	Stat	P
N	426	1139		
Men, %	57	47	X^2=12.5	<.001
Age, mean	44	41	T=4.5	<.001
Has diploma that gives access to University, %	70	68	X^2=0.8	0.37
Household income above average, %	46	38	X^2=10.8	0.06
Often bothered by feeling depressed, %	30	42	X^2=16.6	<.001
Daily (vs. non-daily) e-cigarette users, %	92	77	X^2=47.0	<.001
Use nicotine-containing e-liquid, %	92	89	X^2=4.7	0.09
Nicotine in e-liquid, mg/mL, mean	10	10	t=0.1	0.93
Monthly spending on e-cig, Euros, mean	56	44	T=3.4	0.001
Smoking status, %			X^2=22.1	<.001
Daily smoker	12	21		
Non-daily smoker	6	9		
Former smoker	81	70		
Never smoker	0	0		
Is currently trying to quit smoking, %	68	75	X^2=2.2	0.14
Smoked 1+ puff on cig. in past 7 days, %	27	42	X^2=30.8	<.001
Among current vapers				
Puffs on e-cig per day, mean	199	163	T=3.4	0.001
Duration of e-cig use, days, mean	206	176	T=1.6	0.11
Use a refillable tank system, %	77	60	X^2=29.9	<.001
Use “mods”, %	61	44	X^2=25.7	<.001
Perceived quality of e-cig “very good”, %	57	47	X^2=15.7	0.003
“Very satisfied” with e-liquid, %	63	48	X^2=24.8	<.001
Buy their e-cigs on the Internet, %	71	51	X^2=37.2	<.001
E-cig “definitely” helped quit smoking, %	84	71	X^2=23.1	<.001

Comment:
Compared to participants in the 2013-2016 survey who were contacted by e-mail but did not respond to the 2017 survey, participants in the 2017 survey were more likely to be men, 3 years older, less likely to feel depressed, more likely to be daily (vs. occasional) vapers, more likely to be former smokers (vs. dual users), they took more puffs per day on their e-cigarette, had been vaping for a longer time, spent more money on e-cigarettes, were more likely to use refillable tanks and “mods” (vs. pre-filled models), to buy their e-cigarette in the Internet (vs. in shops), and they were more satisfied with their e-cigarette and more likely to say that it helped them quit smoking.