Attitudes About Regulation *of* E-Cigarettes

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{ABSTRACT}

Background: E-cigarette use and liquid nicotine poisonings of children are increasing while e-cigarette manufacturing, safety, advertising, sales, and use remain largely unregulated. This study examines public support for e-cigarette regulations.

Methods: Using a nationally representative survey in 2014, we asked about support for various regulations on e-cigarettes and perceptions of harms of e-cigarettes. Chi-square analyses compared responses across smoking status, presence of children in home, age, race, and education.

Results: In the RRD frame, 1,511 adults completed the survey (co-operation rate, 86.7%), and 1,518 adults on the probability-based Internet panel completed the survey (final completion rate, 56%). Most adults supported increased e-cigarette regulation. Support was strongest for requiring child-proof packaging (89.9%), manufacturing and safety standards (91.9%), accurate labeling of nicotine levels (95.7%), and sales to minors (90.5%). A weaker majority of adults supported prohibiting fruit and candy flavors (55.4%), menthol flavorings (52.7%), TV/radio advertising (69.9%), or TV/movie product placement (70.9%). The majority of U.S. adults also supported prohibiting e-cigarette use on commercial flights (69.2%) and in indoor public places (55.6%). Adults were divided on the harm reduction potential of e-cigarettes. About half of adults (47.6%) believe them to be less harmful than cigarettes and useful for quitting cigarettes (53.8%), while 61.6% e-cigarettes to be less harmful to bystanders than cigarettes. Chi-square analyses revealed that support for regulations on e-cigarettes and skepticism about harm reduction potential tended to be stronger among females, more educated adults, older adults, nonsmokers, and non e-cigarette users. Region and parental status did not relate to support.

Conclusions: Strong support for increased e-cigarette regulation presents an opportunity for advocates to work at state/local levels to encourage e-cigarette regulations. FDA action to regulate e-cigarettes to protect public health is likely to have strong public support.

{INTRODUCTION}

Electronic cigarettes entered the U.S. market in 2007, and the affordability, availability, and marketing of these products has increased in recent years. The FDA attempted and, subsequent to a legal challenge, failed to regulate these products as drug delivery devices and thus subject them to the stringent "safe and effective" standard required for drug approvals. The courts ruled that the FDA would have to regulate electronic cigarettes as tobacco products rather than as drug delivery devices (unless the manufacturers made therapeutic claims).

The FDA announced its intention to regulate electronic cigarettes as tobacco products in April of 2011 under its authority provided by the Family Smoking Prevention and Tobacco Control Act of 2009 and proposed a "deeming rule" to expand its regulatory authority to include e-cigarettes in April of 2014. The proposed deeming rule would require health warning labels for e-cigarettes and restrict their sale to people 18 years of age and older as well as to permit further regulation of e-cigarettes in the future. The proposed deeming rule, however, did not address the aggressive marketing of this product to youth or the use of flavorings to make the products more attractive. It also did not include child-safety measures.

Poisoning incidents involving e-cigarettes and liquid nicotine jumped by 156 percent from 2013 to 2014. In response to poison risk, child-resistant packaging regulations were recently enacted. On 28 January 2016, President Obama signed into a law a bill that requires child-resistant packaging for liquid nicotine products which goes into effect on 26 July 2016. However, no other federal regulations for product safety, flavors, or marketing currently exist. In the absence of regulations, use of e-cigarettes has increased dramatically in both adults and youth since 2010. Our recent study in Nicotine & Tobacco Research found a substantial increase in past 30-day use from .3% to 7.3%.

Electronic cigarettes do not, as some manufacturers have claims, simply emit "harmless water vapor". Although some people and organizations refer to e-cigarettes' emissions from these products as vapor, these emissions are more accurately described as a toxic aerosol. E-cigarettes emit propylene glycol. The FDA has approved propylene glycol for use in consumable products, but the inhalation propylene glycol has not been approved. Heating propylene glycol changes its chemical composition. The aerosol contains submicron particles which can irritate the lungs, as well as nicotine, toxins, and carcinogens. Moreover, some of the toxins and carcinogens in combustible tobacco smoke are also found, at lower levels, in e-cigarette aerosol.

E-cigarette use among adolescents and adults is increasing, yet e-cigarette manufacturing, safety, advertising, sales, and use remain largely unregulated. This study examines support for e-cigarette regulations and belief about harm reduction potential.

{METHODS}

Using a nationally representative survey in 2014, we asked about support for various regulations related to manufacturing, safety, advertising, sale, and use of e-cigarettes; harms of e-cigarettes; and prohibiting use in public places. Chi-square analyses compared responses across smoking status, children in home, age, race, and education.

Data are from the 2014 Social Climate Survey of Tobacco Control, a cross-sectional dual-frame survey administered to national probability samples of U.S. adults. The design included a Random Digit Dialing (RDD) frame and an internet panel frame developed from a probability sample of U.S. adults, in order to reduce non-coverage issues arising from wireless substitution. Data were weighted to adjust for age, race, sex, and region.

Self-Reported Use of Electronic Cigarettes

Respondents were asked "The next questions are about electronic cigarettes, also known as e-cigarettes, vaping devices, or hookah pens. E-cigarettes look like regular cigarettes, but are battery-powered and produce vapor instead of smoke. Have you ever heard of an e-cigarette before this survey?" Respondents who had heard of electronic cigarettes were asked, "Have you ever used an e-cigarette, even one or two times?" Those who reported yes were 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.

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TABLE 1. WEIGHTED SAMPLE CHARACTERISTICS

	2014 Unweighted N=3,030
Smoking Status	
Never Smokers	56.9%
Former Smokers	24.8%
Non-daily Smokers	4.6%
Daily Smokers	13.7%
Region	
Northeast	12.6%
Midwest	18.4%
South	37.6%
West	31.4%
Race	
White	74.2%
Black	11.5%
Other	14.3%
Age	
18-24	13.7%
25-44	38.8%
45-64	33.3%
65+	14.2%
Sex	
Males	47.6%
Females	52.4%
Education	
Less than HS	9.2%
High School	28.5%
Some College	29.3%
College Degree	33.0%
Child in the Home	
Yes	36.1%
No	63.9%
E-Cigarette Use	
Ever User	17.4%
Past 30 Day Use	7.3%

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FIGURE 1. SUPPORT FOR E-CIGARETTE REGULATIONS

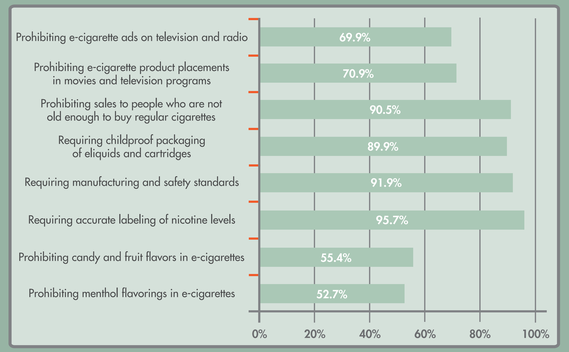


FIGURE 2. SUPPORT FOR E-CIGARETTE USE RESTRICTIONS

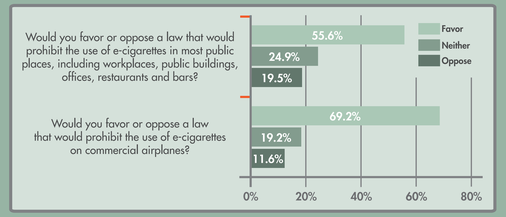
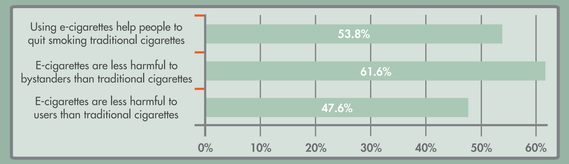


FIGURE 3. BELIEFS ABOUT THE HARMS OF E-CIGARETTES



{RESULTS}

In the RRD frame, 1,511 adults completed the survey (co-operation rate, 86.7%), and 1,518 adults on the probability-based Internet panel completed the survey (final completion rate, 56%). Weighted sample characteristics are presented in Table 1. Most U.S. adults supported increased e-cigarette regulation. Support was strongest for regulations on marketing, packaging, and safety standards. A weaker majority of adults supported banning flavorings (See Figure 1). A strong majority of adults supported prohibiting e-cigarette use on commercial flights, while a weaker majority supported prohibiting use in indoor public places (See Figure 2). Chi-square analyses revealed that support for e-cigarette regulations tended to be stronger among females, more educated adults, older adults, never and former smokers, and non e-cigarette users. Region and parental status did not relate to support.

{DISCUSSION}

Support is nearly universal among U.S. adults for safety regulations and restricting the sales to adults old enough to buy cigarettes. FDA action to regulate e-cigarettes to protect public health is likely to have strong public support. Although the majority of adults supported these potential regulations, non-trivial minorities of Americans did not. Although support for banning e-cigarette use in indoor public places was substantially higher than opposition, a quarter of adults expressed ambivalence on this issue. Support for flavor restrictions was split with almost half of adults opposing restrictions on flavors and menthol in e-cigarettes. The medical and public health communities need to counter industry claims that these products are safe and only produce a harmless water vapor so that the public is better informed about the risks posed by these products.

The scientific evidence has not yet resolved the issue of whether e-cigarettes help adult smokers to quit cigarettes, but there is no public health benefit for children and adolescents using e-cigarettes or being exposed to e-cigarette aerosol. Given the growth in the use of e-cigarettes, regulatory action is needed at the federal, state, and local levels to eliminate exposure to aerosol emissions, and prohibit marketing/flavoring strategies targeting adolescents.