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Considering the Impact of Vaping-Associated Pulmonary Illness Reports on E-Cigarette Harm Perceptions and Tobacco Use Patterns

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To the Editor:

Public health concerns have intensified over possible linkages between vaping and pulmonary injury/mortality. Although the direct cause(s) of vaping-associated illnesses remain unidentified, loosely-regulated products including adulterated devices or liquids are implicated, with the majority of cases involving unregulated tetrahydrocannabinol (THC) products (CDC, 2019). News reports and scientific commentaries (Hsuen et al., 2019) have emphasized concerns over vaping-related illnesses while under-emphasizing research suggesting that e-cigarettes may be less harmful than combustible cigarettes (e.g., produce lower toxicant emissions; NASEM, 2019) and ramifications of e-cigarette bans. We have written this letter to provide commentary on the possible consequences in an overcorrection to vaping-related harms.

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Contributors

All authors developed the letter concept. J.C. Strickland conducted data analysis and collection. J.C. Strickland drafted the initial manuscript with critical feedback from T.R. Spindle, O.A. Vsevolozhskaya, and W.W. Stoops. All authors approved the final version of the manuscript for submission.

Conflict of Interest

The authors have no financial conflicts of interest in regard to this research.

Prior to the recent vaping-associated illnesses, we had conducted a study evaluating e-cigarette perceptions among young adults (aged 18-35). Participants were sampled via crowdsourcing (Amazon Mechanical Turk) and only U.S. residents. Following the escalations in media reports, we re-surveyed the same individuals to evaluate changes in perceived harms and use. Participants were initially surveyed between 5/3/19-6/24/2019 (immediately preceding the first documented cases in July 2019) and again amidst this outbreak (9/16/19-10/2/19). The sample included e-cigarette-only users, cigarette smokers, dual users, and non-users/controls.

Baseline dual users showed modest pre-post reductions in e-cigarette and cigarette use (Table 1). Cigarette-only users had a modest pre-post increase in e-cigarette use and decrease in cigarette use. E-cigarette-only users showed similar pre-post reductions in e-cigarette use as dual users. However, 35% of e-cigarette-only users reported past week cigarette smoking at follow-up, despite reporting no baseline past month cigarette use. These changes were accompanied by increases in perceived e-cigarette harms, including greater endorsement that e-cigarettes were as or more harmful than cigarettes [OR=2.55, $p=.009$] and vaping could lead to early/premature death [OR=3.00, $p=.002$]. Numerous respondents expressed concerns about media reports. For example, one dual user indicated “it [the news] made me more comfortable smoking tobacco bc at least the reports say i’ll suffer when i’m 60, not now”. Other responses alluded to conspiracy theories (e.g., “i feel like big tobacco is blowing up this news to make people go back to smoking regular cigarettes”).

This preliminary, but timely evidence suggests overall emergent shifts in e-cigarette harm perceptions following reports of vaping-associated illnesses that may lead to increased combustible cigarette use. These findings are limited by the small, convenience sample (crowdsourcing did afford a temporally dynamic longitudinal assessment compared to cross-sectional national surveys). We believe, however, that these results emphasize a salient point about maintaining a balanced view regarding a *regulated* e-cigarette market until definitive cause(s) of vaping-associated illnesses are discovered. Concerns over increases in adolescent e-cigarette use and/or progression to cigarette use (Berry et al., 2019) and health effects from poor market oversight are striking and must be emphasized. However, should definitive evidence emerge implicating “black market”, unregulated products as the cause of these illnesses, it is essential to avoid drastic measures (e.g., banning all e-cigarettes) that hinder e-cigarette’s harm reduction potential. The consequences of a public health overcorrection cannot be overstated given that 1300 Americans die daily from cigarette-related illnesses (US Department of HHS, 2014).

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Table 1.

Use Patterns, Perceived Harms, and Response to News about Vaping-Associated Pulmonary Illness (N = 173)

	Control (n = 56)		Daily Cigarette (n = 52)		Daily E-Cigarette Only (n = 23)		Dual Daily User (n = 42)	
	Pre-News	Post-News	Pre-News	Post-News	Pre-News	Post-News	Pre-News	Post-News
E-Cigarette Use								
Years Since First E-Cigarette Use (Mean [SD])	-	-	5.4 (3.0) ^a	-	5.4 (3.4)	-	5.6 (4.5)	-
Past Week E-Cigarette Use	0.0%	1.8%	0.0%	30.8%	100.0%	87.0%	100.0%	88.1%
Daily E- Cigarette Use	0.0%	1.8%	0.0%	19.2%	100.0%	82.6%	100.0%	83.3%
Cigarette Use								
Past Week Cigarette Use	0.0%	1.8%	100.0%	90.4%	0.0%	34.8%	100.0%	92.9%
Daily Cigarette Use	0.0%	1.8%	100.0%	90.4%	0.0%	26.1%	100.0%	88.1%
Perceived Harms of E-Cigarettes								
E-Cigarettes are As or More Harmful than Cigarettes	55.4%	66.1%	32.7%	42.3%	8.7%	17.4%	21.4%	31.0%
Early/Premature Death is Possible After Frequent Use	78.6%	96.4%	73.1%	78.8%	56.5%	73.9%	61.9%	71.4%
Qualitative Response to News								
Balanced	-	19.6%	-	26.9%	-	26.1%	-	19.0%
Concerned	-	39.3%	-	36.5%	-	26.1%	-	45.2%
Unconcerned/Conspiracy Theories	-	8.9%	-	19.2%	-	39.1%	-	14.3%
No Opinion	-	32.1%	-	17.3%	-	8.7%	-	21.4%

Note. Groupings are defined by pre-news baseline behavior. Pre-News columns refer to data collected in the period 5/3/19-6/24/2019 and Post-News columns refer to data collected in the period 9/16/19-10/2/19 from the same respondents. Qualitative response to news reports were coded as a balanced, concerned, unconcerned, or no opinion response by two coders.

^a35 of the 52 (67%) participants in this group reported a history of any e-cigarette use