

Vaporizing cannabis through e-cigarettes: Prevalence and socio-demographic correlates among Ontario high school students

Dear Editor:

Among adolescents, Canadians lead the world in past-year cannabis use (28%).¹ The prevalence is expected to rise once the federal government legalizes recreational cannabis in 2017.² Identified as a public health concern, cannabis use in this population can impede cognitive and emotional brain development³ and increase the risks of mental disorder development (e.g., social anxiety, schizophrenia)⁴ and road traffic injury.⁵ One often-ignored factor influencing cannabis use, however, relates to the method of consumption.

Vaporizing cannabis is a growing delivery method⁶ and warrants attention for two key reasons: 1) adolescents perceive vaporizing cannabis as harmless and medicinal while overlooking its negative impact on the developing brain;⁷ 2) adolescents may be more inclined to use vaporizers because many of these are designed to be portable, discreet and to produce minimal odour. Vaporizers are also available across Canada for purchase without age restrictions.

For these reasons and with cannabis legalization on the horizon, it is timely and critical to monitor trends regarding vaporized cannabis. This is the first study in Canada to examine the prevalence of vaporizer use for cannabis among adolescents. Further explored are the socio-demographic correlates of these users, which can be used as user characteristics to help tailor policies and interventions surrounding cannabis use prevention and reduction within this at-risk population.

METHODS

This study used data from the Ontario Student Drug Use and Health Survey (OSDUHS; 60% response rate), which is the longest ongoing population-representative health survey in Canada of adolescents' overall health and health risk behaviours (e.g., alcohol, tobacco) and is led by the Centre for Addiction and Mental Health in Toronto. Further details of this representative survey can be found elsewhere.⁸

In 2015, data on vaporizer use for cannabis were collected for the first time. Students in grades 9–12 (ages 15–18) were asked if they used e-cigarettes in the previous 12 months for marijuana, hash oil, liquid, or wax. This study presents vaporizer use data from a random half sample (split form) of 3,171 high school students, in addition to data on socio-demographic correlates, including sex, age, race, immigrant, and socio-economic status.

Analyses were based on a complex sample design with 21 strata (region by school level) and 220 primary sampling units (schools). Selection weights were applied to account for varying sampling probabilities and restore the sample to the corresponding population distribution. Descriptive, univariate, and multivariate analyses were conducted using STATA 14.

RESULTS AND DISCUSSION

The prevalence of high school students vaporizing cannabis through e-cigarettes in the previous year was 8% ($n = 257$; Table 1). This is a higher rate compared to the only other study examining adolescent vaporizer use internationally (5.4% among 3,245 Connecticut, US adolescents).⁹ However, the current study still likely underestimates usage levels since the measure was specific to e-cigarettes. Though e-cigarettes are common devices, the range of vaporizers on the market is widening (e.g., portable, non-portable).

Table 1. Prevalence and socio-demographic correlates of vaporizing cannabis through e-cigarettes among Ontario high school students: Data from the 2015 Ontario Student Drug Use and Health Survey

	Yes vaporize (8.2%; n = 257)	No vaporize (91.8%; n = 2889)	Unadjusted OR (95% CI)	Adjusted OR (95% CI), n = 2495
Age [$M = 15.97$, $SD = 1.30$]	$M = 16.30$, $SD = 1.11$	$M = 15.66$, $SD = 1.27$	1.38* (1.20–1.58)	1.36* (1.16–1.58)
Gender				
Female [47.9%]	6.0%	94.0%	Reference	2.21* (1.46–3.35)
Male [52.1%]	9.6%	90.4%	1.94* (1.34–2.80)	
Background				
Non-white [34.1%]	6.3%	93.7%	Reference	
White [65.9%]	8.3%	91.7%	1.16 (0.78–1.74)	
Parent origins				
Both parents born in Canada [48.9%]	8.7%	91.3%	1.36 (0.90–2.06)	
One parent born in Canada [14.3%]	7.4%	92.6%	1.31 (0.71–2.42)	
Neither parent born in Canada [36.8%]	6.3%	93.7%		
Immigrant status				
Canadian born [80.9%]	4.2%	95.8%	Reference	3.03* (1.50–6.14)
Immigrant [19.1%]	8.3%	91.7%	2.77* (1.58–4.84)	
Mother's education				
No high school [35.8%]	11.3%	88.7%	Reference	
High school [19.0%]	9.8%	90.2%	0.73 (0.43–1.22)	
College/university [45.2%]	6.0%	94.0%	0.51* (0.33–0.80)	
Father's education				
No high school [31.4%]	8.4%	91.6%	Reference	1.57* (1.01–2.46)
High school [26.3%]	11.1%	88.9%	1.55 (0.95–2.52)	
College/university [42.3%]	5.0%	95.0%	0.71 (0.43–1.18)	
SES (score 1–10) [$M = 6.95$, $SD = 1.54$]	$M = 6.87$, $SD = 0.11$	$M = 7.00$, $SD = 0.03$	0.97 (0.86–1.10)	

* $p < 0.05$.

Hence, to better monitor the prevalence of vaporized cannabis use in adolescents, future assessments should account for *all* vaporizer designs.

In terms of demographics, the significant multivariate correlates of having used e-cigarettes to vaporize cannabis in the previous year were: age (older, OR = 1.36), gender (male, OR = 2.21), immigrant status (Canadian-born, OR = 3.15), and father's education (high school, OR = 1.57). Practitioners and policy-makers working to curb cannabis use in Canada can use this knowledge to tailor reduction/prevention strategies that are age-, gender-, culture- and socio-economic-status-specific.

The study's cross-sectional design and self-reported data are study limitations since causal inferences cannot be made. Study strengths include a large representative, population-based sample of Ontario students and novel findings on vaporizer use in the context of a rapidly evolving legislative landscape regarding cannabis control. This study can set the stage to monitor future use of vaporized cannabis while user characteristics can inform the development of practice guidelines and policies to limit this trend in adolescents.

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