Cannabis education: Prevalence and socio-demographic correlates among Ontario middle and high school students

Dear Editor:

A leading public health concern in legalizing recreational cannabis across Canada pertains to cannabis consumption among adolescents.¹ This population group is particularly vulnerable to the risks associated with cannabis use, and this has been attributed to the drug's interference with structural (e.g., brain volume) and functional (e.g., cognitive, emotional) brain development.² Consistent evidence further reveals that early and frequent use during the teenage years is linked with low school performance, road traffic injury due to cannabis-impaired driving, and prospective psychiatric illness (e.g., anxiety, depression, schizophrenia).^{3,4}

Despite the evidence, Canadian adolescents continue to have a benign view of cannabis⁵ and exhibit the highest prevalence of past-year use among their global peers (i.e., 28%).⁶ The related concerns with legalization revolve around the drug's increase in public accessibility, "normalization" of use, and potential spike in consumption patterns. In recognition of cannabis' risks, in conjunction with upcoming legalization next summer (i.e., 2018), many Canadian organizations and groups – including the Task Force on Cannabis Legalization and Regulation – have stressed the importance of providing cannabis education to adolescents to mitigate harms of use in this at-risk population.

Thus, it is timely and important to begin monitoring and highlighting the proportion of adolescents who receive cannabis education in the coming years. To the authors' knowledge, this is the first Canadian study to examine the prevalence of high

school students receiving cannabis-specific education. By doing so, a "pre-legalization" benchmark will be set for "post-legalization" comparative purposes. Further explored are the socio-demographic correlates of those receiving cannabis education, which can inform strategies tailored towards curbing cannabis use.

METHODS

This study used data from the 2015 Ontario Student Drug Use and Health Survey ($n = 10\,426$; 59% student completion rate). The self-report survey – led by the Centre for Addiction and Mental Health – is Canada's longest ongoing population-representative health survey, which helps monitor health risk behaviours in adolescents (i.e., grades 7–12). Further survey details can be found elsewhere.⁷

This study presents outcome data ($n = 4863$) on adolescents who reported to receive cannabis education during the 2014–2015 academic year. The independent variables used included gender, grade, ethnicity, socio-economic status, parent education level, and school location. Descriptive, univariate and multivariate analyses were conducted using STATA 14. 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 to restore the sample to the corresponding population distribution.

RESULTS AND DISCUSSION

Approximately 50% of the sample reported to have not received any classes or presentations on cannabis during the 2014–2015 academic year (i.e., 49.4%, $n = 2402$; Table 1). Significantly fewer high school students (i.e., grades 9–12) reported receiving cannabis education (OR = 0.77; CI: 0.59–1.01) compared to their younger

Table 1. Prevalence and socio-demographic correlates of Ontario adolescents receiving cannabis education: Data from the 2015 Ontario Student Drug Use and Health Survey

	Cannabis education classes/presentations			
	None (49.4%; $n = 2402$)	More than one (50.6%; $n = 2461$)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Grade				
Grade 7–8 [24.8%]	46.9%	53.1%	Reference category	
Grade 9–12 [75.2%]	50.8%	49.2%	0.79* (0.64–0.98)	0.77* (0.59–1.01)
Background				
Non-white [35.2%]	52.8%	47.2%	Reference category	
White [64.8%]	47.9%	52.1%	1.38* (1.15–1.65)	1.41* (1.14–1.75)
SES (score 1–10) [$M = 6.99$, $SD = 1.54$]	$M = 7.08$, $SD = 1.61$	$M = 7.06$, $SD = 1.53$	0.97 (0.92–1.03)	
Mother's education ($n = 3961$)				
No high school [1.6%]	58.3%	41.7%	Reference category	
High school [18.0%]	45.7%	54.3%	1.78 (0.82–3.85)	
College/university [80.4%]	49.1%	50.9%	1.61 (0.76–3.40)	
Father's education ($n = 3733$)				
No high school [2.1%]	41.7%	58.3%	Reference category	
High school [25.0%]	47.3%	52.7%	0.95 (0.72–1.24)	
College/university [72.9%]	49.4%	50.6%	0.74* (0.58–0.94)	
School location				
Urban area [93.8%]	49.4%	50.6%	Reference category	
Rural area [6.2%]	48.9%	51.1%	1.20* (0.79–1.84)	
Gender				
Female [47.9%]	51.8%	48.2%	Reference category	
Male [52.1%]	46.5%	53.5%	1.94* (1.34–2.80)	

* Statistically significant with $p < 0.05$.

peers (i.e., grades 7–8), and significantly more Caucasian students reported receiving cannabis education (OR = 1.41; CI: 1.14–1.75) compared to non-Caucasian students. With recreational cannabis legalization approaching, the results highlight the need to provide cannabis education to all middle and high-school students in Ontario, particularly given that Canadian youth – who have inaccurate understandings of cannabis’ risks (e.g., view cannabis as harmless to health) – have also expressed clear interest in learning comprehensively about the drug.⁵

To help facilitate the increase in cannabis education, it will be important to focus on the strategic approach in delivery and the specific content to be addressed. Systematic reviews^{8–10} have concluded that approaches to delivering cannabis content are more effective in reaching adolescents and limiting use when: digital-based (e.g., social media); facilitated by a non-teacher; frequent and factual; and peer and family member-engaging. Furthermore, applying scare tactics, the “just say no” approach, and over-assertions of cannabis’ harms (e.g., emphasizing causation over risk) are cautioned against. In terms of specific cannabis content to be delivered, Canadian youth are seeking greater clarification and understanding on various cannabis constructs, including: low-risk use guidelines; consumption methods and dosing; risks relating to addiction, mental health, and driving; mechanisms of cannabis’ effects on the brain; and cessation strategies.⁵

In conclusion, this novel study’s findings illustrate the lack of – and need for – cannabis education among Ontario adolescents. The identified prevalence of cannabis education also provides a benchmark for comparative purposes in the “post-legalization” era. Evidence-based educational needs and delivery approaches can guide cannabis-focused school health curricula and broader

strategies to inform adolescents’ decision-making around cannabis consumption.

George Mammen, PhD, Sergio Rueda, PhD, Jürgen Rehm, PhD

Institute for Mental Health Policy Research, Centre for Addiction and Mental Health, Toronto, ON

Correspondence: George Mammen, PhD, george.mammen@mail.utoronto.ca

doi: 10.17269/CJPH.108.6538

REFERENCES

1. Tibbo P, Crocker CE, Lam RW, Meyer J, Sareen J, Aitchison KJ. *Implications of Cannabis Legalization on Youth and Young Adults. Position Statement*. Ottawa, ON: Canadian Psychiatric Association, 2017.
2. Jacobus J, Tapert SF. Effects of cannabis on the adolescent brain. *Curr Pharm Des* 2014;20(13):2186–93. PMID: 23829363. doi: 10.2174/13816128113199990426.
3. Paruk S, Burns JK. Cannabis and mental illness in adolescents: A review. *S Afr Fam Pract* 2016;58:S18–21. doi: 10.1080/20786190.2014.978106.
4. George T, Vaccarino F (Eds.). *Substance Abuse in Canada: The Effects of Cannabis Use During Adolescence*. Ottawa, ON: Canadian Centre on Substance Abuse, 2015.
5. McKiernan A, Fleming K. *Canadian Youth Perceptions on Cannabis*. Ottawa, ON: Canadian Centre on Substance Abuse, 2017.
6. UNICEF Office of Research. *Child Well-Being in Rich Countries: A Comparative Overview*. Florence, Italy: UNICEF Office of Research, 2013.
7. Boak A, Hamilton HA, Adlaf EM, Mann RE. *Drug Use Among Ontario Students, 1977–2015: Detailed OSDUHS Findings (CAMH Research Document Series No. 41)*. Toronto, ON: Centre for Addiction and Mental Health, 2013.
8. Lize SE, Iachini AL, Tang W, Tucker J, Seay KD, Clone S, et al. A meta-analysis of the effectiveness of interactive middle school cannabis prevention programs. *Prev Sci* 2017;18(1):50–60. PMID: 27785662. doi: 10.1007/s11121-016-0723-7.
9. Porath-Waller AJ, Beasley E, Beirness DJ. A meta-analytic review of school-based prevention for cannabis use. *Health Educ Behav* 2010; 37(5):709–23. PMID: 20522782. doi: 10.1177/1090198110361315.
10. Lemstra M, Bennett N, Nannapaneni U, Neudorf C, Warren L, Kershaw T, et al. A systematic review of school-based marijuana and alcohol prevention programs targeting adolescents aged 10–15. *Addict Res Theory* 2010;18(1): 84–96. doi: 10.3109/16066350802673224.