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Title	Prevalence and correlates of electronic cigarette use among Canadian students: cross-sectional findings from the 2014/15 Canadian Student Tobacco Alcohol and Drug Survey
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Reviewer 1	Dena Schanzer MSc
Institution	Public Health Agency of Canada, Centre for Infectious Disease Prevention and Control, Ottawa, Ont.
General comments (author response in bold)	This study aims to describe the prevalence of e-cigarette among students in grade 6 -12 in Canada by various risk factors. This study is interesting. The data make an important contribution. However, the discussion fails to fully highlight the significance of the results. My comments relate mostly to the principles of scientific writing. **The discussion has been revised to address the significance of the results more completely.** 1. Abstract: The results presented in the abstract should include point estimates as well as 95%CI. The list of higher user groups is long and difficult to fully appreciate as the comparison group is not stated and the level of statistical significance is not provided. As with smoking, there are a number of significant risk factors. In addition to summarizing the national rate, I find the multivariate results for grade 6-9 vs 10-12 and perceived risk "slight" (or no plus slight) vs "don't know" (or moderate + high and don't know), the most interesting based on the research questions raised in your introduction. Grade 10-12 students will be more likely to have ever used e-cigs because they are older. However, it is interesting that this group is more likely to have used e-cigs in the last 30 days (OR of 3.00 (2.20-4.07)) but that this association is no longer stat sig after controlling for other risk factors. The implication is that public health messaging and controls have the potential to be effective. Public health messaging is also most likely to move students in the no risk/slight risk group to the "don't know" or moderate/high group. Hence the suggestion for this comparison. The term "susceptible to smoking" is only defined later in the document and seems to define a 'geek' group. I'd suggest reporting on this susceptibility separate from smoking status (current/former/never) and not include it in the abstract. • **Point estimates, 95%CI and comparison group are now included in results section and abstract.** • **Main results presented in the abstract have been modified according to the revised analyses.** • **More emphasis has been given to the interpretation of multivariate results, as suggested.** • **The "don't know" category of perceived risk of regular e-cig use has been added to the multivariate logistic result regression analyses.** • **Susceptibility to smoke variable has been separated from smoking status variable, and because both variables were related and overlapped, we decided to keep only smoking status, which is a more important correlate of e-cigarette use (Glasser et al., 2016). We now distinguish between "experimental smokers" and "never tried smoking" to account for never smokers who tried and haven't tried smoking, respectively.** 2. Methods: I'd suggest moving the questionnaire to an appendix/ supplementary file. **We agree to submit Table 1 as Appendix 1.** 3. Results: It would be helpful to include a comparison with smoking status in Table 2. (I find the results from the CDC a useful comparison http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/). **Lifetime and past 30 days smoking rates for grade 6-12 are reported in the interpretation section as such: Overall rates of e-cigarette use are similar to the proportion of students who report smoking cigarettes in their lifetime (17.6%, 447 000) or in the past 30 days (6.3%; 158 900).** 4. Much of the text in the results section simply repeats contents of the Tables. As a result, I am unlikely to read this section. Please reduce the amount of repetitive text, limiting repetitions to a few highlights. Please include the estimate with its 95%CI. Your results are spread over three tables (rate, bivariate OR and multivariate OR). These three aspects are best interpreted together. The text of the results section should aim to aid interpretation of the rates, the bivariate and multivariate ORs. **The results section has been rewritten to reduce repetitive text, include estimates with 95%CI, and focus on adjusted odds ratios. To fulfill our first objective of presenting rates of e-cigarette use, prevalences of ever and past 30-day use are briefly presented in the first and second paragraph of the results section. The third paragraph describes results of adusted odds ratios. Because results were similar for ever and past 30-day use, we presented estimates for past 30-day use only. All estimates are presented in Table 2.** 5. Please avoid overly relying on the 0.05 threshold in the interpretation of the results. Technically, there should be little difference in interpretation between a p-value of 0.04 and one of 0.06, though we label only one statistically significant. For the most part, the level of statistical significance of most of your results is much higher than 0.05, and confidence intervals will accurately relay this information. For example, the statement: "Ever and past 30-day e-cigarette use was higher among males than females, and among grades 10-12" should be reworded to include the 95%CI of the rates along with the OR, its 95%CI and the adjusted OR. **Statements have been reworded to refer to CI and ORs, rather than level of significance.** 6. Perceptions that e-cigarettes are easy to obtain, is likely related to whether the student knows where to get e-cigarettes or has already obtained them. This may not be a true risk factor. **We agree with Reviewer 1 that students who have already used e-cigarettes are likely to perceive they are easy to obtain. However, in our sample, 17% of students report ever using e-cigarettes but 46% perceived access was easy and 20% did not know. If perceived ease of access was only related to use, we would expect proportion to be closer to rates of use. Perception of ease of access may not be a true risk factor, and we have been careful not to make such an assumption by avoiding the term and talking about correlates instead. We consider perception of ease of access is an environmental correlate of use, that can be modified by public health intervention (change in legislation, communication, enforcement, etc.).** 7. It would be helpful to include alternative reference groupings in Table 4 for smoking status and perceived risk as mentioned above. **Smoking status has been separated from susceptibility to smoke, and the reference category is now "never tried smoking". We also added the category "don't know" for perceived risk.** 8. Discussion The conclusion that the study "suggests that many young people, smokers and non-smokers, are trying e-cigarettes despite the fact that e-cigarettes containing nicotine are not approved for sale in Canada" should be supported by the presented results. Only 1/3 of students who have tried e-cigs used them in the last 30 days. Are e-cigs without nicotine available

	I Canada, and how is the statement that nicotine e-cigs are not available relevant? **We agree with Reviewer 1 that this sentence was not clear and have deleted it.** 9. Regarding the statement: "there is still debate and uncertainty surrounding the role of e-cigarettes as a gateway to smoking; our cross-sectional study cannot be used to inform this debate". Agreed, a cross-sectional study is not designed to assess this question. But related questions were not explored. For example, how does the percent recent e-cig by grade compare with proportion current smoker by grade? Is there a trend is in this rate ratio? **The revised interpretation section now discuss the following related questions:** **• Lifetime and past 30-day rate of use of e-cigarettes compared to conventional cigarette among grades 6-12 students;** **• We also end the paper by raison the following issues : Although e-cigarettes use is substantially less likely among never and experimental smokers compared to current smokers, in absolute numbers never and experimental smokers make up the majority of grades 6-12 students in Canada who used e-cigarettes in the past 30 days. More research is needed to document the frequency and reasons of use of e-cigarettes among youth, which are likely to differ between current, experimental and never smokers. Whether e-cigarette use has helped to reduce the number of experimental smokers who would become regular smokers in the future is a question of interest, as well as whether e-cigarettes have helped individuals to become former smokers. Since these data were collected in 2014-15, e-cigarette legislation has been implemented in many provinces, banning sales to minors, promotion and advertising, and use where smoking is prohibited. Such legislation is likely to further decrease perceptions that e-cigarettes are easily accessible to minors. Announced upcoming changes in regulation of e-cigarettes, plain packaging for tobacco and marijuana legalization are likely to change risk perceptions of e-cigarette use. The next cycles of this survey will be useful to monitor e-cigarette use, access and perceptions among students across Canada as major changes are expected in the regulation of psychoactive substances appealing to youth in the coming years. In parallel, longitudinal studies are needed to document the role of e-cigarettes in the uptake or reduction of smoking among Canadian youth as they progress to adulthood.**
Reviewer 2	Rj Edjoc PhD MSc BSc
Institution	Public Health Agency of Canada, Social Determinants and Science Integration Directorate, Ottawa, Ont.
General comments (author response in bold)	1. Introduction : The article was well written and brings to the forefront the need for such studies for public health surveillance particularly in this vulnerable population and e-cigarettes. This article found significant variability in e-cigarette use amongst provinces. Males, those in gr. 10-12, current and former smokers were its highest consumers. **Nothing to address in this comment.** 2. On page 4 line 38 The authors write Our aim is to:…. Could this be a grammatical error as there are two suggested aims in the document? Perhaps: Our aims are to: **This has been corrected.** 3. Methods/Statistical analyses The analyses were sound however I would be concerned regarding the multicollinearity of certain variables prior to them entering the adjusted logistic regression models. Is it possible to have a line in the document stating this fact that a test for multicollinearity was performed and a line stating that confounders were identified (via a 10% change in unadjusted vs. adjusted OR) prior to them entering the adjusted model? I'm sure these tests were performed but having them in the manuscript leaves little room for ambiguity. **A sentence was added in the statistical analyses section that states: The calculation of tolerances and variance inflation factors indicated no problems of multicollinearity among explanatory variables.** 4. Results: The results were well presented and adequately discussed. My preference however would be to have the confidence intervals beside the estimates to ascertain variability and significance on Page 11 lines 5- 30. **Confidence intervals have been added beside the estimates in the results section and abstract.** 5. Discussion : The discussion was well written as well however it did not discuss some interesting key results. For example: why were certain ethnic groups more at risk vs. protective against e-cigarette use? Is there any literature to support this finding? Another point of discussion should be the effect of novelty and experimentation associated with e-cigarette use in light that significant users were in gr 10-12's (ie. there is an increase of risky behaviours and experimentation with this age group). Finally, what are the implications of your findings on future research in this area? **As suggested by reviewer 1, analyses were revised with changes in smoking status categories and susceptibility to smoke variable taken out of the adjusted model. In the revised analysis, the adjusted ORs do not indicate that certain ethnic groups are more at risk than others, and results indicate that grade 10-12 are less likely to have used e-cigarettes in the past 30-days compared to grades 6-9.** **We now discuss additional key results and implications of our findings on future research in the interpretation section, such as:** **• Overall, lifetime and past 30-day rates of e-cigarette use among students are similar to those observed for smoking cigarettes (17.6%, 447 000 and 6.3%; 158 900, respectively);** **• Substantial variations were observed across provinces, with the lowest rate found in Ontario and the highest rates in Newfoundland and Labrador. Reasons for these provincial differences are unknown, and should be investigated.** **• Although e-cigarettes use is substantially less likely among never and experimental smokers compared to current smokers, in absolute numbers never and experimental smokers make up the majority of grades 6-12 students in Canada who used e-cigarettes in the past 30 days. More research is needed to document the frequency and reasons of use of e-cigarettes among youth, which are likely to differ between current, experimental and never smokers. Whether e-cigarette use has helped to reduce the number of experimental smokers who would become regular smokers in the future is a question of interest, as well as whether e-cigarettes have helped individuals to become former smokers.** **• The next cycles of this survey will be useful to monitor e-cigarette use, access and perceptions among students across Canada as major changes are expected in the regulation of psychoactive substances appealing to youth in the coming years. In parallel, longitudinal studies are needed to document the role of e-cigarettes in the uptake or reduction of smoking among Canadian youth as they progress to adulthood.**