Article details: 2021-0325
Title: Scoping review of guidance on cessation interventions for electronic cigarettes and dual electronic and combustible cigarettes use
Authors: Anasua Kundu MBBS MScCH, Erika Kouzoukas MPH, Laurie Zawertailo PhD, Chantal Fougere MPH, Rosa Dragonetti MSc, Peter Selby MBBS MHSc, Robert Schwartz PhD

Reviewer 1: Dr. Annie Montreuil
Institution: Institut national de sante publique du Quebec Montreal
General comments (author response in bold)

This is an important paper as there is an urgent need for vaping cessation guidelines, especially for youth. Unfortunately, little research is available to support such guidelines, and this paper shows it well. The paper is very well written and the scoping review methods are sound. My comments are minor.
Thanks for reviewing the paper.

Reviewer 2: Riccardo Polosa
General comments (author response in bold)

The topic of cessation interventions for e-cigarettes users is novel and potentially informative. I suggest the following changes for improvement.
Thanks for reviewing the paper and providing valuable comments and suggestions. Please find our responses to your comments in the following section.

Major Points

The Introduction is too long and lacks focus; the research question and key objectives of the scoping review should be better stated. Also, it should be indicated why the authors have carried out a scoping review and not a systematic review.
The Introduction has been edited to make it coherent and brief. The key objective and reasons for choosing a scoping review instead of a systematic review has been stated at the end of the Introduction on page 4 as below:
"The objective of this review was to map existing health care guidance or recommendations on cessation interventions for e-cigarette users and dual users of cigarettes and e-cigarettes among adolescents, youth and adult populations as well as identify knowledge gaps for future research. We conducted a scoping review instead of a systematic one because it allows mapping the body of a literature on a broad research topic, review of literature with heterogeneous study designs and thereby provides an overall account of existing evidence and future research scope.[32–34]"

1. include only essential key prevalence figures about e-cigarette use (and please update EC prevalence to current 2021 data).
We now report only data from the Canadian Tobacco and Nicotine Survey (CTNS) and have included 2021 vaping prevalence and 2020 dual use prevalence data on page 3.

2. avoid indulging in discussions about potential health effects of vaping as it is an exclusion criteria - the sentence <<The long-term impacts of vaping are still not fully

known and need to be investigated (3,7)>> encapsulate the essence of the problem and will suffice.
We followed the instruction and edited the part accordingly on Page 3.

3. update dual use figures - also dual use should be properly characterized as part of a behavioral pathway that evolves over time (although the authors are correct in stating that dual users are more heavily dependent, many studies show that they are more likely to quit compared to exclusive tobacco smokers).
Dual use prevalence has been updated from recent statistics of CTNS 2020 on page 3. In addition to mentioning higher nicotine dependence and higher rate of quit attempts among dual users in the Introduction on page 3 and 4, we briefly discussed the stepwise process of dual use cessation and suggested one approach to achieve complete abstinence in the 'Future research directions' on page 13 as below:
"Dual use cessation is a stepwise process and switching dual users to exclusive e-cigarette use first and then providing support for vaping cessation might be an effective strategy, which needs further testing."

4. avoid asymmetrical citation by health organizations - in the UK, health authorities promote EC use for smoking cessation and relapse prevention and in the US, FDA's strict regulatory requirements will ensure that ECs on the market for US smokers are "appropriate for the protection of public health" (based on the review of the scientific data, the US FDA has recently granted market authorization of several vaping products).
We briefly mentioned about the e-cigarette's promotions for smoking cessation in the UK and the US regulations along with the recommendations of several organizations for quitting vaping on page 3 as below:
"Although the use of e-cigarette as a prescription for smoking cessation is promoted in the United Kingdom17 and marketing authorization of vaping products are permitted in the United States,18 several organizations (i.e., American Lung Association, World Health Organization, Smokefree.gov, Truth Initiative) recommend quitting vaping and advise against switching to ENDS from combustible cigarette.[19–22]"

5. It is clear why dual users wish to completely abstain from tobacco smoking, but it is less intuitive why regular vapers who switched away from smoking should give up vaping. Please expand on the motivation for why e-cigarette users desire to stop vaping (what are the drivers?) - this is an important area for the development of successful programs.
We focused on the importance and motivation behind quitting vaping among former smokers who switched to e-cigarette as below in the Discussion on page 11 and 12 as below:
"Although there is controversy whether former smokers who switched to vaping for smoking cessation purpose should be encouraged to quit vaping, a recent meta-analysis reported higher risk of smoking relapse among former smokers who regularly used e-cigarettes compared to those who did not.67 Moreover, former smokers reported reasons like no need of e-cigarette to stay quit, not satisfying, safety concerns and costs behind stopping vaping.68 Hence, in addition to conducting future research on long-term impact of complete abstinence, vaping cessation programs for former smoker population should emphasize on these motivations."

6. modify the closing paragraph along these lines <<Although guidelines on best management for the cessation of combustible cigarettes are available (ref here), it is unclear if similar approaches can be extrapolated to nicotine dependence from electronic cigarettes. The primary goal of this scoping review was to map the available evidence and to identify knowledge gaps on the topic of cessation interventions for e-cigarettes in exclusive and dual users (i.e. combined use of e-cigarettes and combustible tobacco cigarettes). As such, scoping reviews are an ideal tool to determine the scope of coverage of a body of literature on a given topic and give a clear indication of the volume of literature and studies available as well as an overview of its focus and gaps.>>
We edited the closing paragraph of Introduction on page 4 as below:
"Although guidelines on best management for the cessation of combustible cigarettes are available,31 it is unclear if similar approaches can be extrapolated to nicotine dependence from electronic cigarettes. The objective of this review was to map existing health care guidance or recommendations on cessation interventions for e-cigarette users and dual users of cigarettes and e-cigarettes among adolescents, youth and adult populations as well as identify knowledge gaps for future research. We conducted a scoping review instead of a systematic one because it allows mapping the body of a literature on a broad research topic, review of literature with heterogeneous study designs and thereby provides an overall account of existing evidence and future research scope.[32–34]

We agree with the authors conclusion that <<current evidence on vaping cessation interventions is limited>>. Even more so when it is considered that the positive impact reported in the RCT using text messaging (see ref 42) is largely confounded by the effect of monetary compensation (a big motivational driver in adolescents). Moreover, there is general consensus that effectiveness of text messaging and stop smoking smartphone applications in the medium long term is poor (mainly due to reduced compliance/adherence and high drop-outs rates).
We added the limitation of the Graham et al. RCT on page 11 as follows:
"However, the RCT was limited by lack of bio-chemical verification of abstinence and providing considerable monetary compensation.45 Moreover, mobile health interventions are generally limited by high dropout rates65 and text-messaging smoking cessation programs were found more beneficial when combined with other cessation supports.[66]"

The authors state that <<There are some important differences between smoking and vaping.>>. This is obvious. What is less obvious is how <<Understanding these differences is important to modify the guidance for vaping cessation intervention>>. The explanations provided by the authors do not make much sense and fail to take into consideration personal beliefs, motivation and needs of e-cigarette users (important drivers of using or stop using these products).
We edited the section on page 9 and 10 as follows:
"There are some important differences between smoking and vaping. In addition to delivering higher nicotine concentrations than conventional cigarettes by some popular brands, the power on some e-cigarettes can be adjusted to increase the amount of nicotine delivered.4,58,59 Users' personal beliefs about the relative harm of e-cigarettes,60 the social acceptability of vaping and other beliefs,61 motivations and needs of e-cigarette use may also distinguish vaping from smoking.[62] Understanding these differences is crucial in developing guidance for vaping cessation interventions."

Regarding dual use, I am not surprised that authors <<did not find any studies meeting our inclusion criteria of targeting complete cessation of both electronic and combustible cigarettes>>. Achieving this double target is quite unrealistic, unless complete abstinence from tobacco cigarettes is successfully achieved first, as clearly illustrated by Martinez et al (ref 58). The clear distinction between vaping cessation in exclusive e-cigarette users vs. smoking cessation in dual users is important for future research and needs to be stated.

We looked for guidance or recommendations on complete cessation of both cigarette and e-cigarette among dual users and did not find any such paper. We found two studies (Martinez et al., and Graham et al.) which evaluated the impact of a smoking cessation intervention and a vaping cessation intervention respectively on dual use cessation (mentioned on page 12). Hence, we suggested one approach to address dual use cessation in the 'Future research directions' on page 13 as below:

"Fifth, dual use cessation is a stepwise process and switching dual users to exclusive vaping first and then providing support for vaping cessation might be an effective strategy and should be evaluated by future research."

I was disappointed not to see a critical appraisal of the papers included in the scoping review. This is an important step of scoping reviews and it is missing.

We added the critical appraisal of the included studies in the Abstract (page 2), Methods (page 6 and 7), Results (page 9), Table 1 and detailed scoring of the studies in Appendix 3-4.

Because the review is about cessation programs, there should be much more detail about the content of these programs - particularly in relation to vaping cessation.

We explained why we didn't provide detail about the programs in the Limitation on page 13 as below:

"We did not elaborate on vaping cessation programs undertaken by different organizations, as our goal was to identify recommendations or guidance for different types of vaping cessation interventions, not to do a comparative analysis between programs. However, we investigated whether the organizations based their recommendations on available evidence on vaping cessation and found only one of them (SAMSHA recommendation)[46] did that."

Recommendations for future research need to be a separate section, expanded and better focused – after all, this is one of the goals of the study as per the abstract.

We added a new section "Future research directions" on page 13, where we presented Table 2 and briefly mentioned our suggestions for future researchers to address the identified research gaps.

Minor Points

Almost all of the studies were conducted in the US, so at least a reference to the pay-for-services model and its possible impact is in order.

We mentioned about the pay-for service model in the Limitation on page 13 as follows:

"Almost all of the studies were conducted in the US, where pay-for-services model might act as an incentives to provide cessation services.[71,72] However, these

findings may not be generalizable to other jurisdictions which do not have a pay-for-services model."

Age groupings overlap is a problem – see page 10, but Table 1 does not display these details. I think that classifying youth as up to age 25 is troubling, but actually this has little bearing on the research question.
We followed World Health Organization and Statistics Canada's standard age limits for defining target population categories. We mentioned the age limits and overlaps between them in Table 1.

Authors should state that the best strategy to address excessive levels of vaping among youths is prevention and not cure, with authorities enforcing current regulations limiting access to tobacco products (e.g. T21) and illicit sales to minors.
The goal of our study was to identify the guidance for cessation interventions for e-cigarette users and dual users. Prevention is always better than cure, but that was not covered by our research scope. It will involve a detail review of vaping prevention strategies and policies, which can be addressed by future research.

It is shocking to see that so many reputable health/scientific organizations are making recommendations based on zero evidence (all the evidence is based on smoking not vaping cessation). The problem of low quality advice must be clearly stated.
We have mentioned in the Discussion on page 10 that:
"We found several vaping cessation recommendations/guidance documents published by reputable organizations such as Substance Abuse and Mental Health Services Administration (SAMHSA),[46] US Preventive Services Task Force (USPSTF),[47] American Academy of pediatrics,[48] Canadian Paediatric Society,[50] and Health Canada.[56] Although generally scoring high on critical appraisal (Table 1), none of them except the SAMHSA publication based their evidence on interventions targeting vaping cessation. The USPSTF final recommendation statement was based on 12 RCTs included in a meta-analysis, but all of these studies examined smoking cessation as an outcome.47 In this respect, despite their conclusion of insufficient evidence in support of behavioural counselling and medications for tobacco product cessation, the applicability of this recommendation for vaping cessation is questionable (Table 1, Appendix 2)."

Please include a summary table listing the research gaps and corrective actions (separately for single and dual users).
We added Table 2 summarizing the research gaps and relevant future directions for research.

Appendix 2 - Included studies should specify whenever possible frequency of use (daily, experimental, frequent, not-so-frequent) in a separate column. This is a determinant of nicotine dependence and likely to have impact vaping cessation rates.
We added one column 'Vaping frequency at baseline" in Appendix 2, where we documented the participants' frequency of vaping as daily, weekly or monthly as mentioned in the papers.