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Review article

# Preventing and addressing youth vaping in British Columbia, Canada: Evidence from triangulation of a scoping review of vaping policy and qualitative interviews with school-aged youth

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ABSTRACT

*Objectives:* Vaping remains a widespread and ongoing epidemic among youth, with research demonstrating that well-designed policies can play a critical role in curbing this growing issue.
*Methods:* The present study provides a Canadian case-study examination of vaping policy by triangulating a scoping review of federal (Canada, $n = 3$), provincial (British Columbia, $n = 4$), and regional (Okanagan, $n = 26$) policies ($N = 33$) from 2000 to 2024 with qualitative interviews with secondary school students aged 12 to 18 ($N = 25$). The scoping review, conducted in 2020 and updated in 2024, followed the Arksey and O'Malley framework and incorporated guidelines from PRISMA to ensure comprehensive identification of relevant policies across government, health, and educational domains. The interviews, conducted in 2020 and 2021 in the Okanagan region of British Columbia, were analyzed using NVivo software through conventional content analysis, an inductive approach where two coders collaboratively identified categories and sub-categories from participant responses using a finalized codebook.
*Results:* The policy review identified gaps in comprehensiveness, public accessibility, and enforcement, particularly at regional levels, where policies often lack comprehensiveness and fail to address vaping-specific challenges. Interview findings revealed youth perceptions of school policies as poorly implemented, reactive, and overly punitive, highlighting the need for proactive, educational approaches to address vaping behaviors.
*Conclusions:* Findings emphasize the importance of clear, accessible, and targeted policies that address possession, distribution, and marketing while involving youth, educators, and parents in awareness and prevention efforts. This case study provides insights applicable to other jurisdictions, offering a framework for designing dynamic, equitable, and effective vaping policies internationally.

## 1. Introduction

The popularity of vapor product use, or vaping, among school-aged youth has become an ongoing public health concern (Jones and Salzman, 2020; Lockett et al., 2024; Polosa et al., 2022; Struik et al., 2020). There are several reasons for this. First, our understanding of the longitudinal health impacts of vapor product exposure still lacks depth. However, the tobacco industry, known for its historical interference in tobacco control policies, capitalizes on this uncertainty by portraying vaping as a "safer" option compared to traditional smoking (Jackson et al., 2024; Stone and Marshall, 2019). Additionally, studies have found that adolescents are more likely to begin smoking cigarettes if they have previously vaped (Berry et al., 2019; Kelly et al., 2023; Sun et al., 2023). People who vape regularly are up to five times more likely to begin smoking cigarettes regularly when compared to those with no history of tobacco use (O'Connor et al., 2019). In addition, research demonstrates strong evidence for harms from vaping; in addition to being a gateway to cigarette smoking, vaping has been found to have a similar profile regarding disease outcomes when compared to smoking (Glantz et al., 2024).

To address youth vaping, federal, provincial, and regional governments have implemented policies regulating vapor product visibility, access, distribution, and use. Understanding the strengths and limitations of these measures is vital for refining conditions contributing to

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youth vaping (O'Connell and Kephart, 2020). Access to and awareness of these policies among youth, parents, teachers, and administrators are crucial, as policy-driven approaches address structural, environmental, social, and individual factors influencing health behaviors (O'Connell and Kephart, 2020). Exploring youth perceptions of vaping policies, particularly at the school level, can provide insights into how policies are experienced and lead to more effective prevention and support strategies.

Policy accessibility, comprehension, and readability significantly influence youth vaping. Clear, well-crafted policies reduce youth engagement by promoting awareness of risks and healthier choices (Myers et al., 2019). In contrast, unclear or inaccessible policies can hinder awareness and raise equity concerns, as marginalized youth may face disproportionate discipline (Green et al., 2020). For instance, poorly communicated or inconsistently enforced policies may result in harsher consequences for youth in under-resourced areas, such as Indigenous reservations, exacerbating marginalization (Dinno and Glantz, 2009; Garrett et al., 2015; Kingsbury and Hassan, 2020). Additionally, policy comprehensiveness is critical; policies that do not cover key areas such as education, prevention, and enforcement may leave significant gaps, limiting their effectiveness (Garrett et al., 2015).

Policies at different jurisdictional levels offer varying degrees of protection. Regional policies, such as those in schools or municipalities, play a key role at individual, classroom, and community levels by addressing vapor product possession and sale, and promoting youth-led education to raise awareness about vaping harms (Centers for Disease Control and Prevention et al., 2019; Kostuch et al., 2024; Lippert et al., 2019; Patel et al., 2022). Accordingly, research-informed, well-enforced policies at multiple levels can reduce youth access to vapes, limit availability through social sources, and decrease youth desire to use these products (O'Connell and Kephart, 2020).

Despite the existence of vaping policies at various levels (federal, provincial, regional), there is limited knowledge about their specific provisions, enforcement mechanisms, and youth perceptions. Therefore, our study seeks to explore and analyze these aspects to provide a comprehensive understanding of vaping regulations and their impact on youth. The primary aim of this study was thus to assess the current landscape of policies that address vaping and compare these with the needs, experiences, and opinions of youth regarding such policies by triangulating results from a policy scan and qualitative interviews in British Columbia, Canada. As such, this study provides a flexible model for identifying, analyzing, and assessing the overall characteristics of vaping policies and youth perspectives on them, which can be adapted to other regions in Canada and internationally.

## 2. Method

Using a parallel approach, we combined results of a scoping review of policy and of qualitative interviews with 25 youth participants aged 12 to 18 in British Columbia, Canada. The scoping review includes a comparative focus on policies from the years 2000–2024 at three levels: federally across Canada; provincially in the province of British Columbia; and regionally – specifically at the school and municipal (city, town, village, and community) levels – in the Thompson-Okanagan region of British Columbia. British Columbia is the third most populous province in Canada, and the Thompson-Okanagan region is a key and diverse area within the province (Statistics Canada, 2022). Examining vaping policies across federal, provincial, and regional levels is important because it reveals how policies may overlap or contradict each other, ensuring a comprehensive understanding of their combined impact and effectiveness. This multi-level analysis ensures a thorough understanding of the collective impact and effectiveness of vaping policies and helps identify gaps and inconsistencies that could affect health outcomes. The interviews, conducted between September 2020 and March 2021, aimed to capture youth perspectives on school policies surrounding vaping.

### 2.1. Scoping review of policy

#### 2.1.1. Overview & Search Strategy

A scoping review of policy was conducted using the Arskey and O'Malley framework, combined with PRISMA scoping review guidelines (Moher et al., 2009). The initial review was conducted between October and December 2020 and was subsequently updated in July 2024 to ensure the inclusion of the most recent policies and modifications. First, Google was used to identify policies from the Government of Canada, the Province of British Columbia, and various Okanagan school, health authority, and municipal domains. Search terms included "vaping policies Canada" and "vaping product regulations Canada" for federal policies, "vaping policies British Columbia" for provincial policies, and "Okanagan vaping policies," "School District # vaping policy," and "Okanagan vaping bylaws" for regional policies. Only policy documents on government, regulatory body/health authority, or secondary/post-secondary institutional websites were selected and scanned for additional referenced policies. Next, the databases Canadian NewsStream (ProQuest) and desLibris were searched for relevant news articles and documents on vaping policies using terms such as (Vaporizer OR Vaping OR Vape* OR *E*-cigarette OR Electronic Cigarette OR JUUL) combined with (Nicotine) and (Regulation* OR Order* OR Law OR Policy* OR Act OR Bylaw). Appendix A provides an example search strategy. No novel policies were identified beyond those found in the Google search. Finally, the British Columbia government was contacted directly to request records of regional smoking and vaping-specific policies and bylaws. Again, no new policies were found.

#### 2.1.2. Policy selection and screening

Policies were compiled and screened by two authors (RS, SD-F) using pre-determined exclusion criteria. Policies were excluded if they were not valid Canadian federal, provincial, or regional policies developed after 2000; were not officially passed or implemented or were hypothetical; did not address vaping; focused solely on smoking; or were inaccessible or unretrievable. Eligible policies had to be issued by governing bodies, regulatory bodies (health authorities), or secondary/post-secondary institutions and originate from Canada (federal), British Columbia (provincial), or the Okanagan (regional). Policies were required to specifically mention and target vaping, including aspects such as prevention, promotion, regulation, management, or stigma/harm reduction. Lastly, policies had to be currently valid and enforced, with an active implementation date and no expired or predetermined end date for enforcement.

#### 2.1.3. Data Extraction & Synthesis

Policy characteristic data were extracted and summarized in a separate Excel spreadsheet. Extracted information per policy included names and jurisdiction levels (federal, provincial, regional) of the policy and issuing body; date-specific details (i.e., dates initially proposed, passed, implemented, and most recently modified); supply reduction measure data such as information on sale to and by minors (e.g., whether the policy prohibited sale to minors) and/or the general public (e.g., whether the policy regulated general sales); and demand reduction measure data such as information on vaping, advertising, promotion, sponsorship (e.g., whether use was regulated or banned in public places and if so where), as well as on legal and monetary measures to reduce demand (e.g., taxation or penalties on use, sale and consumption). Lastly, two authors (RS, SD-F) reviewed extracted data and considered the accessibility of each policy, evaluating how easily it could be found through a Google search and whether it was presented in lay language.

### 2.2. Qualitative interviews with youth

#### 2.2.1. Sampling and recruitment

Purposive sampling (Campbell et al., 2020) was used to recruit vaping and non-vaping school-attending youth aged 12–18 and living in

BC, Canada through online Instagram ads posted by a third party (PH1 Research) in 2020. In the ad, youth were invited to click on the ad link, respond to screening questions, and then contact a study researcher if deemed eligible. This study received approval from the University of British Columbia Okanagan Behavioral Research Ethics Board (#H20–02312), in accordance with institutional guidelines for the protection of human subjects concerning safety and privacy.

#### 2.2.2. Data collection

Interviews were conducted in late 2020 and early 2021. All eligible participants provided informed consent. Youth under the age of 16 provided parental consent in addition to their assent to participate in the study. Participants first filled out a questionnaire on demographic information (e.g., age, gender) and exposure to smoking and vaping. Participants were then invited to participate in a 45-min semi-structured interview via University of British Columbia-licensed Zoom to discuss factors influencing vaping and their experiences and perceptions of school policies on vaping. For this study, questions on two topics were presented: 1) perspectives on school policies (e.g., "Are you familiar with your school's rules around vaping? What are they?"), and 2) suggestions for addressing youth vaping (e.g., "What do you think should be done to address vaping among youth?"). After completion of interviews, each participant received a $20 gift card to thank them for their time.

#### 2.2.3. Data analysis

Interviews were audio-recorded and transcribed verbatim by the research team. Participant responses for each question were organized around the two main topics: perspectives on school policies and suggestions for addressing vaping. Transcripts were exported directly to NVivo software, where each topic became a heading within the coding hierarchy, automatically assigning responses to their respective headings. We then applied conventional content analysis to identify categories and sub-categories within each topic, derived from participant responses. Conventional content analysis is an inductive method in which codes, categories, and sub-categories are developed from participant responses (Bouvier and Rasmussen, 2022; Mayring, 2021). Using an iterative process, two individuals participated in initial data coding and analysis through a series of collaborative coding sessions. First, an initial review of responses per topic was carried out without coding to achieve an initial understanding of the scope of responses. We then analyzed each response line-by-line, coding them into initial content-based categories (e.g., "policies as helpful"). Any coding discrepancies were discussed and finalized. Next, sub-categories within these (e.g., "policies as preventative") were identified and organized, and potential relationships among these were discussed (Mayring, 2021). A codebook was thus finalized by naming and defining each category and sub-category. We analyzed all transcripts using this codebook, recording the frequency (%) of endorsement for each category and sub-category.

### 2.3. Triangulation of scoping review and interview findings

Lastly, we triangulated the two sets of findings by comparing the data obtained from our scoping review with the qualitative findings from youth interviews. Through iterative analysis, we systematically juxtaposed the policy elements identified in the review, specifically their contents (e.g., measures and foci), enforcement mechanisms (e.g., target of measures, penalties, recency of modification), and level of dissemination (e.g., inclusion of knowledge translation measures, ease of retrieval) with the perspectives of youth. This approach ensured that our triangulation process prioritized the perspectives and experiences that were most representative of the youth population, enhancing the relevance and applicability of our findings for informing future policy interventions. We identified points of convergence, where policy provisions aligned with youth sentiments, as well as instances of divergence or discrepancy. By triangulating these two sources of data, we were able to construct a joint display diagram that visually illustrates the relationship between vaping policies and youth perceptions of them (Creswell and Plano Clark, 2017).

## 3. Findings

### 3.1. Scoping review of policy

Out of 47 policies initially screened, 7 were federal, 6 provincial, and 34 regional. Among the regional policies, 19 were secondary/post-secondary school-based or health authority-based, and 15 were city/municipal bylaws. Ultimately, 33 policies were included for data extraction: 3 federal, 4 provincial, and 26 regional. The regional policies covered 13 cities/municipalities, 9 secondary school districts, 3 post-secondary institutions, and 1 health authority within the Okanagan region (see Appendix B for a list). Fig. 1 depicts the policy selection process.

Only 2 federal, 1 provincial, and 3 regional policies were created specifically for vaping; the rest were modifications or addendums to existing smoking/tobacco policies. Twelve policies explicitly targeted youth (e.g., under 18 or 19). Table 1 provides a detailed analysis of policy measures across jurisdictions, highlighting significant differences in focus, accessibility, youth inclusion, and recency of updates. Federal and provincial policies generally offer comprehensive coverage, accessibility, and recent updates, whereas regional policies show notable disparities, with some lacking in these aspects.

Table 2 summarizes the protection measures in regional and school policies on vaping. Most policies prohibit vaping, enforce disciplinary actions for violations, and mandate explicit signage. However, fewer policies address possession or sale/distribution of vapes, identify knowledge translation opportunities, or specify designated vaping locations.

### 3.2. Qualitative interviews with youth

Qualitative interviews were conducted with 25 youth aged 12 to 18 (mean age = 16). Most participants were female (60 %, $n = 15$), White (88 %, $n = 22$), and born in Canada (92 %, $n = 23$). Except for one university student, all participants were high school students; 16 % ($n = 4$) attended medium-sized schools, and 44 % ($n = 11$) attended large schools. Most participants (88 %, n = 22) did not smoke cigarettes, but 44 % ($n = 10$) currently vaped, 32 % ($n = 8$) had tried it, and 24 % ($n = 6$) did not vape. Most participants (68 %, $n = 17$) reported no vaping in their household, but 88 % (n = 22) indicated that some or most of their friends vaped, with only two (8 %) reporting no friends who vaped. Youth frequently saw vaping-related content on social media, especially on Snapchat (84 %, $n = 21$), Instagram (80 %, $n = 20$), TikTok (60 %, n = 15), and YouTube (28 %, $n = 7$). Regarding general social media use, most participants frequently used Instagram (96 %, $n = 24$), Snapchat (92 %, n = 23), YouTube (92 %, n = 23), and TikTok (72 %, $n = 18$), while Facebook and Messenger were only sometimes used (56 %, $n = 14$). Over half (52 %, $n = 13$) described vaping as an epidemic.

Table 3 summarizes key categories and sub-categories from youth perspectives on current school policies. While youth generally view vaping policies as suitable and well-disseminated, they express concerns about execution, describing current school policies as poorly implemented, reactive, and ineffective in reducing vaping.

Table 4 summarizes youth perspectives on vaping, presenting thematic categories, sub-categories, and endorsement frequencies for strategies to address youth vaping. The findings emphasize youth support for a multifaceted approach, including education, health awareness, stricter policy enforcement, regulation of youth-targeted marketing and sales, and greater involvement from schools, government, and parents.

### 3.3. Triangulation of scoping review and interview data

Fig. 2 compares findings on vaping policy content, enforcement, and

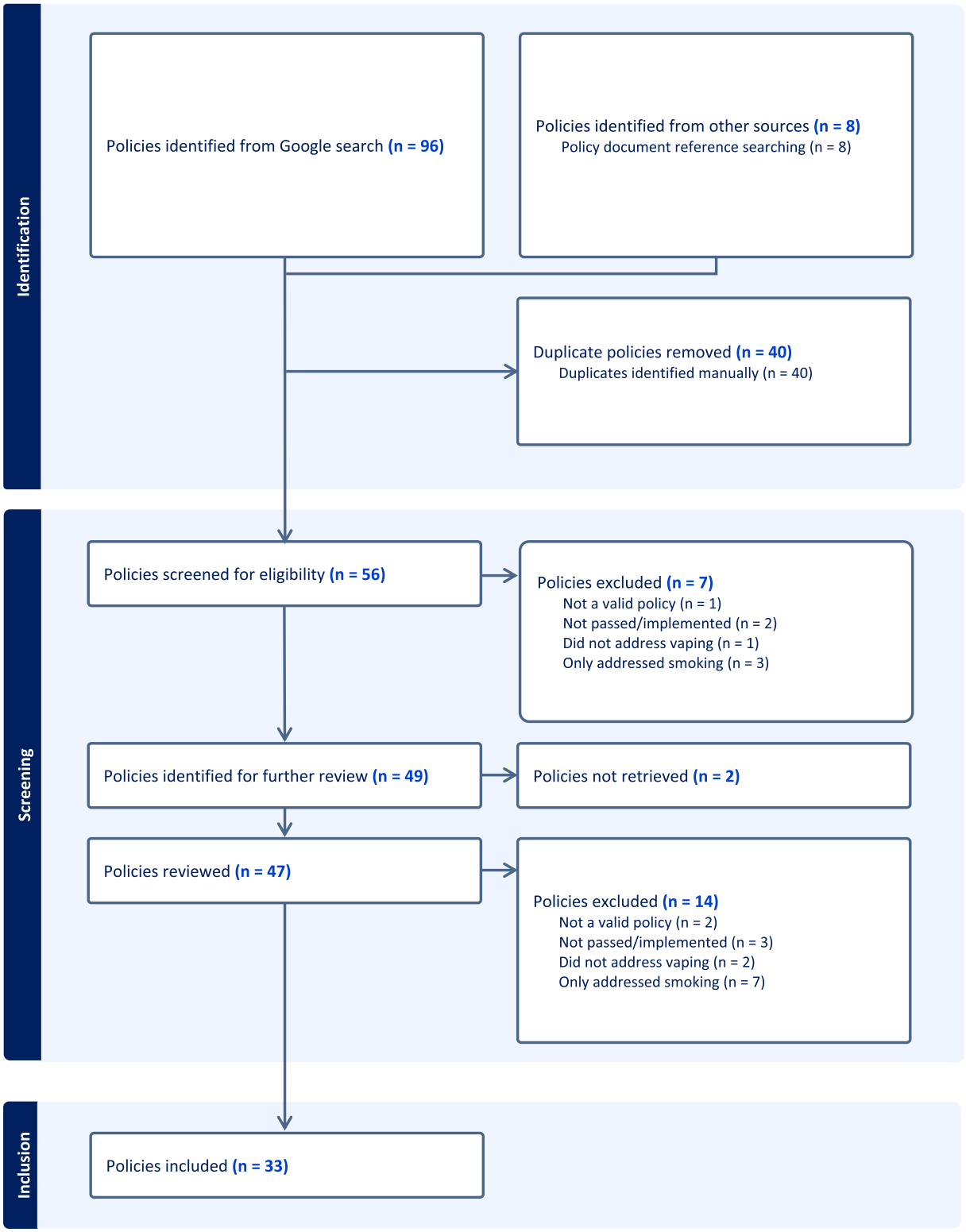


**Fig. 1.** Modified PRISMA flow diagram illustrating the identification, screening, and selection process of current (2024) federal (Canada), provincial (British Columbia), and regional (Okanagan) vaping policies.

dissemination with youth perspectives. The policy scan reveals that regional and school policies often lack comprehensive coverage of vaping-related issues and are infrequently updated, particularly in enforcement and social media incorporation. Youth perspectives highlight dissatisfaction with school policies, emphasizing a need for more proactive measures, such as addressing marketing and flavors, involving schools and teachers in health education, and distributing health information. The data underscore a significant theme: most school policies are inadequately designed, with limited content, reactive approaches, and insufficient enforcement, leading youth to view them as ineffective. Youth call for policies with proactive characteristics, including addressing marketing tactics, enhancing health education, and focusing

**Table 1**
Characteristics of current (2000–2024) vaping policies in Canada at the federal level, in British Columbia, and in the Okanagan region: prohibition measures, key foci, target groups, penalties, and accessibility.

| Jurisdiction Level *Example* | Prohibition Measures (n, %*) | Key Foci of Measures | Target & Location of Measures | Penalties | Year of Most Recent Modification to Vaping-Specific Content (n, %*) | Includes Youth? (n, %*) | Accessibility (n, %*) |
|---|---|---|---|---|---|---|---|
| Federal ($n$ = 3)<br><br>e.g., *Vaping Products Promotion Regulations (Health* Canada, 2020*)* | Manufacture (3/3, 100)<br><br>Sale (3/3, 100)<br><br>Promotion (2/3, 67) | • Production, packaging, and labeling<br>• Health warning information dissemination<br>• Advertising and display<br>• Nicotine content limitations | • Retailers<br>• Advertisers<br>• Manufacturers<br>• Distributors across Canada | • Fine (up to CAD $1,000,000)<br>• Incarceration<br>• Organizational disciplinary action (e.g., employee dismissal)<br>• Prohibition from manufacturing | 2023 (3/3, 100) | Yes (3/3, 100)<br><br>"Young persons under 18" | Found on first page of Google search results (3/3, 100)<br><br>In lay language (0/3, 0) |
| Provincial (n = 4)<br><br>e.g., *Tobacco and Vapor Products Control Act (* Government of British Columbia, 2015*)* | Sale (3/4, 75)<br><br>Promotion (2/4, 50)<br><br>Consumption (3/4, 75) | • Locations of prohibited use and/or sale<br>• Packaging requirements<br>• Point-of-sale restrictions (age, signage, reporting, registration)<br>• Taxation | • Consumers<br>• Retailers<br>• Distributors across British Columbia | • Fine (up to CAD $5000)<br>• Incarceration<br>• Organizational disciplinary action (e.g., employee dismissal)<br>• Prohibition from selling | 2020 (1/4, 25)<br>2022 (1/4, 25)<br>2023 (2/4, 50) | Yes (2/4, 50)<br>No (2/4, 50)<br><br>"Under 19"<br>"Under 16" | Found on first page of Google search results (3/4, 75)<br><br>In lay language (2/4, 50) |
| Regional (n = 26)<br>(9 = schools districts; 3 = postsecondary institutions; 1 = health authority; 13 = municipalities)<br><br>e.g., *Kelowna Parks and Public Spaces Bylaw (* City of Kelowna, *2015)* | Consumption (26/26, 100)<br><br>Sale (4/26, 15)<br><br>Possession (1/26, 4)<br><br>Promotion (1/26, 4) | • Locations of prohibited use<br>• Signage prohibiting use | • Users and visitors of organizational property | <u>School districts</u>:<br><br>• Institutional disciplinary action (e.g., expulsion)<br><br><u>Municipalities</u>:<br><br>• Fine (up to CAD $10,000)<br>• Incarceration | 2015 (2/26, 8)<br>2016 (3/26, 12)<br>2017 (3/26, 12)<br>2018 (8/26, 31)<br>2019 (8/26, 31)<br>2020 (2/26, 8) | Yes (7/26, 27)<br>No (19/26, 73)<br><br>"Minors"<br>"Students" | Found on first page of Google search results (6/26, 23)<br><br>In lay language (23/26, 88) |

* Expressed as a percentage of policies within that jurisdiction level.

**Table 2**
Characteristics of protection measures in current (2000–2024) regional and school vaping policies in the Okanagan region of British Columbia, Canada.

| Protection Measure | # (%*) of Regional Policies | # (%*) of School Policies |
|---|---|---|
| Prohibit use of e-cigarettes | 16/26 (100) | 12/12 (100) |
| Prohibit possession of e-cigarettes | 1/26 (4) | 1/12 (8) |
| Prohibit sale or distribution of e-cigarettes | 2/26 (8) | 2/12 (17) |
| Identify or suggest knowledge translation opportunities or events (e.g., awareness campaigns, school newsletters) | 2/26 (8) | 2/12 (17) |
| Identify specific locations where vaping is allowed or prohibited (e.g., parks, doorways) | 25/26 (96) | 11/12 (92) |
| Require explicit signage banning vaping | 9/26 (35) | 5/12 (42) |
| Employ disciplinary action for violation of measures | 16/16 (100) | 12/12 (100) |

* Expressed as a percentage of policies within that jurisdiction level (26 regional policies; 12 school policies).

on prevention rather than relying solely on disciplinary actions.

## 4. Discussion

### 4.1. Summary of findings

Our policy scan indicates that different jurisdictional levels address unique aspects of vaping prevention, with varying comprehensiveness, dissemination, and readability. Canadian federal policies regulate vapor product manufacturing and distribution, but enforcing indoor vaping bans is challenging. Provincial policies in British Columbia cover retail point-of-sale but not usage beyond these settings. Municipal and school policies in the Okanagan restrict usage locations but lack public education efforts. Thus, streamlined, comprehensive policies and increased public awareness are needed across all levels.

Regarding accessibility and readability, federal policy, though thorough, can be difficult to understand due to legal jargon and complex references; however, its dedicated landing page improves accessibility through search visibility. Provincial policy is clearer and more concise and, despite lacking a central landing page, remains accessible via Google search. Regional policies, however, presented search challenges, with some entirely inaccessible due to broken links or missing files. These brief policies often address penalties but overlook key aspects like possession and intervention, possibly leading to disparate understanding among youth, parents, and educators and hindering effective intervention (Al-Delaimy and Sim, 2021). Additionally, variability and limited dissemination of regional policies could lead to unequal disciplinary outcomes, particularly affecting marginalized youth; for instance, students of color may face disproportionate disciplinary outcomes due to limited policy access in neighborhoods impacted by gentrification and redlining (Dinno and Glantz, 2009; Garrett et al., 2015; Green et al., 2020; Kingsbury and Hassan, 2020). Disparities in bylaw content, e.g., parking lot vaping bans only in certain cities, can also create confusion, potentially leading youth to vape in areas with looser regulations (Struik et al., 2023).

Finally, our triangulation of policy data with youth perspectives reveals further issues. School vaping policies, often adapted from smoking policies, were perceived by youth as poorly implemented, reactive (i.e., addressing vaping after it occurs) rather than proactive, overly

**Table 3**
Perspectives of school-aged youth on helpful and unhelpful features of current (2000–2024) school vaping policies in the Okanagan region of British Columbia, Canada (n, %).

| Category | Sub-category (n, %**) | Description | Exemplary Quote |
|---|---|---|---|
| Helpful elements of policies | Suitable (16/25, 64) | Youth generally consider policies specifically targeting vaping to be agreeable and helpful. | *"Rules on vaping on campus are fair. Especially given pollution and COVID. You don't see as much people vaping in the bathrooms anymore. Also rules are a good eye opener to realize consequences for your future,* e.g., *my friend who got suspended because of it might have a hard time getting scholarships." - #11, female* |
| | Well-disseminated (15/25, 60) | Youth have an awareness of existing policies concerning vaping. | *"We are all really aware of our school policies; every year they give an assembly to not vape and they say on the announcements they will find and suspend people." - #10, female* |
| | Preventative (7/25, 28) | Youth find existing school policies discourage vaping and make it less acceptable. | *"School rules stop kids from at least using it at school, passing it around, and sharing so it deters [vaping] a little bit, which helps younger kids not get into it." - #18, female* |
| | Keep vaping off school property (7/25, 28) | Current policies banning vaping on school property make vaping less accessible and discourage its occurrence. | *"It's good not having vaping on school property because [students] are scared to get in trouble. This way other kids won't see them and think they are cool." - #17, female* |
| | Comforting (4/25, 16) | Youth are comforted by existing school policies because it means that others care about them and want to keep them safe, even if they are addicted. | *"What's good is my school doesn't deny vaping, they try to be accommodating and meet in the middle. We have an addictions counsellor come in so kids don't feel as scared coming forward about it and are less vulnerable." - #5, female* |
| Unhelpful elements of policies | Poorly executed (15/25, 60) | Current school policies are poorly executed, contradictory, and/or not always enforced, leading to difficulty stopping vaping in its tracks and other negative consequences. | *"[Rules] do not discourage students, they just make it so the school is not responsible. My school has a smoke pit but you can't vape on school grounds. It doesn't make sense to have a smoke pit when you can't vape on school property. This can encourage students to start smoking instead of vaping since they will just go and get influenced there. My one friend started smoking because they saw it there." - #6, female* |
| | Overly reprimand-focused (15/25, 60) | Current school policies are reactionary and punishment-focused, which fail to curb vaping and lead to negative outcomes such as anxiety and dangerous alternatives. | *"I understand why they take your vape away, but [people] just get their hands on another one. Some kid had his taken. He had an 18,650 battery. He was holding wires to each end of the battery and holding it up to a tank to make his own vape and it was very, very dangerous." - #22, male* |

** Expressed as a percentage of the total sample (N = 25).

discipline-oriented, and ineffective in reducing vaping or providing comfort or protection. Most school policies only ban vaping on school property and outline disciplinary measures, but lack comprehensive coverage of possession, distribution, social support, health information, outreach, social media, and parental/staff involvement. Despite some policy awareness, youth report greater exposure to pro-vaping advertisements, especially on social media, emphasizing the need for schools to improve the dissemination of accurate information on both policy details and the harms of vaping. Furthermore, as policies were rarely updated, they often failed to address the evolving vaping landscape; for instance, outdated school policies might prohibit smoking but overlook vaping, making enforcement ineffective compared to updated federal and provincial regulations. Youth expressed strong support for targeted vaping policies and believed these policies could be effective if properly implemented and enforced, particularly if they regulate marketing, flavors, and sales to minors and online. Youth also highlighted the importance of schools and teachers taking a proactive role in providing accurate, up-to-date information about vaping. Overall, current vaping policies in British Columbia's Okanagan region appear to fall short in curbing youth vaping and underscore the need for comprehensive, proactive measures with greater school involvement, a need echoed by local youth.

### 4.2. Significance, implications, and recommendations

The above findings bring to light several areas of significance. **First, findings highlight the need for comprehensive policies to be created for the specific purpose of addressing vaping,** as research shows these are more effective in curbing youth vaping than adapted smoking policies due to their targeted approach (Al-Delaimy and Sim, 2021). Unlike generic smoking policies, vaping-specific policies address the unique appeal of vaping products, flavors, and marketing to youth. In line with youth demands, these policies include stricter controls on advertising, flavored products, and youth access, recognizing that vaping behaviors and trends differ from traditional smoking (Schneller et al., 2022; Al-Hamdani et al., 2019; Reiter et al., 2024a; Reiter et al., 2024b). Tailored policies, by addressing vaping's specific challenges, better adapt to the industry's rapid evolution and create a more effective deterrent for youth (Pollack Porter et al., 2018).

**Second, our findings underscore the urgent need to update vaping policies to keep pace with fast-evolving trends and technologies.** Outdated, static policies are ineffective in curbing youth vaping, as they fail to address new behaviors and vapor products, a limitation widely noted in general policy literature (Brownson et al., 2009; Oliver et al., 2019). We found many regional policies to have been crafted when vaping was in its infancy, with few updates since, especially as new, discreet devices emerged (Centers for Disease Control and Prevention, National Center National Center for Chronic Disease Prevention and Health Promotion, and U.S. Department of Health and Human Services, 2019). Most post-2018 revisions simply added cannabis-specific elements following federal legalization of cannabis, except for British Columbia's rollback on plain packaging requirements for vapor products, a decision criticized as a setback (Guichon et al., 2022). Consequently, policies likely miss the mark in regulating the wide variety of products and youth-targeted marketing tactics, like fruit and candy flavors and bright, eye-catching packaging (Reiter et al., 2024a;Reiter et al., 2024b; Harrell et al., 2017; Savelli et al., 2015). The rapid market introduction of new vaping products regularly outpaces policy updates, leaving regulations lagging behind industry innovations, and is directly linked to increased levels of youth uptake of vaping (Centers for Disease Control and Prevention, National Center National Center for Chronic Disease Prevention and Health Promotion, and U.S. Department of Health and Human Services, 2019; Hammond et al., 2024). Thus, to effectively tackle youth vaping, policies must be dynamic, with regular evaluations to stay relevant in a shifting market (Hudson et al., 2019; Campus et al., 2021).

**Third, effectively preventing youth vaping requires policies to adopt a comprehensive approach beyond just banning vaping.** We

**Table 4**
Perspectives of school-aged youth on strategies to address youth vaping in the Okanagan region of British Columbia, Canada (n, %).

| Category | Subcategory (n, %**) | Description | Exemplary Quote |
|---|---|---|---|
| Factors to be addressed to successfully target youth vaping (i.e., *what should be done?*) | Education (8/25, 32) | People need to be meaningfully educated about youth vaping and its components. | *"If we had actual health professionals that went into schools and gave talks and interventions, we'd reach a lot more people… parents are also uninformed on what it is, what it can do; if they were better informed they'd try a lot harder to get their kids not to do it." - #8, female* |
| | Awareness of health consequences (8/25, 32) | People's awareness of the harms of vaping to one's health needs to be increased. | *"I think there should be more awareness on what vaping does to your body. This does not mean just to your health and lungs but the effects of the addiction itself." - #17, female* |
| | Policy enforcement (5/25, 20) | Vaping policies, including school policy enforcement and age of sale restrictions, need to be increasingly enforced to prevent and stop youth from vaping. | *"I think schools should enforce the rules a bit more if they're going to have them. Otherwise people just don't take them seriously, and don't take the government seriously either." - #7, female* |
| | Regulation of vape marketing (5/25, 20) | Vape marketing, including JUUL advertisements and vape flavors (such as 'cotton candy'), need to be regulated so as to not encourage youth vaping. | *"I think the flavors shouldn't be as great. The whole point is to stop your addiction, not fuel it with cotton candy… Also not targeting it towards children or youth. It shouldn't be in super bright and colourful packages." - #5, female* |
| | Regulation of vape sales (5/25, 20) | The sale of vapes to minors, especially online and in various flavors, needs to be monitored and regulated so youth can't get their hands on vapes. | *"We need to make sure [vapes] are not being sold to underage kids. Or being re-sold. It's really easy to get your hands on them being under-age. I've heard of places, vape shops, that don't even check ID." - #1, female* |
| | Schools (7/25, 28) | Schools, including teachers, need to be involved in addressing the youth vaping epidemic. | *"We need more responsible teachers/students to report vaping. Teachers could put in more time to figure out who's distributing,* i.e., *the dealer in the mini markets. In smaller schools, it's easier to have a common responsibility. In larger schools, it makes sense to have a committee to offer structure." - #2, male* |
| Key roles in targeting youth vaping (i.e., *who should do it?*) | Government (7/25, 28) | Government involvement is needed to stop youth from vaping. | *"I actually started 50 [mg/mL nicotine] as soon as they banned it as kids started ordering stuff to make it themselves. It's not like government restriction is keeping it out of their hands, just making it a little difficult. What they could do is what the US did with closed systems; you can't buy Juuls in the US anymore that are cotton candy or other flavors." - #22, male* |
| | Parents (4/25, 16) | Parents need to be involved to combat youth vaping. | *"Getting parents involved is good because if they see [vaping] as a bad thing, they will probably take action (e.g., take the vape away, have a talk with their kid). Teachers and parents are the people you are around the most at that age; they're people you trust, so if they give you that info you would be more likely to stay away from [vaping]." - #16, male* |

** Expressed as a percentage of the total sample ($N = 25$).

found school policies to be lacking in key components: addressing possession, sale, and distribution, and incorporating clear signage, knowledge translation initiatives like awareness campaigns, and defined vaping-prohibited zones (Patel et al., 2022). As mentioned by a participant, schools have become hotspots for a "black market" where youth sell vape devices to underage peers (Schiff et al., 2020; Taylor et al., 2021); relatedly, research indicates that many vape shops strategically locate themselves near schools and may sell to minors despite adult-only policies (Cole et al., 2019; Kilcommons et al., 2020; Roeseler et al., 2019; Zhang et al., 2018). Prohibiting not only use but also possession, sale, and distribution thus strengthens deterrence by limiting access points for youth (Al-Hamdani et al., 2019). Additionally, educational efforts like teacher training, parental involvement, and visible signage support awareness of vaping risks and promote a culture of responsibility (Patel et al., 2022). Setting clear boundaries by restricting vaping near doorways or school premises reinforces the importance of nicotine-free environments (Al-Hamdani et al., 2019). Such holistic approaches address the complexity of youth vaping by combining regulations, education, and spatial restrictions for a more effective and sustainable strategy (Reiter et al., 2024a;Reiter et al., 2024b).

**Fourth, school policies must extend beyond disciplinary actions,** as punitive measures alone, like fines or suspensions, often fail to curb youth vaping and address it reactively rather than proactively (Patel et al., 2022; Bonell et al., 2013; Dobbs et al., 2019). In our findings, while some municipal policies covered possession, school policies still largely focused on reprimanding students, sometimes without even addressing vaping by others, e.g., teachers or parents, on school grounds. Disciplinary approaches overlook root causes such as peer pressure, curiosity, and lack of awareness about vaping risks, and further shame and stigmatize vulnerable youth, potentially worsening the issue (Groom et al., 2021; Alexander et al., 2019; Dubé et al., 2023). A holistic approach should include education, mentoring, science-informed awareness campaigns, and peer-led support to empower youth with the knowledge and resources to make informed health choices (Kostuch et al., 2024; Wyman et al., 2021). Combining disciplinary actions with proactive measures may thus offer a more comprehensive strategy to effectively prevent youth vaping (Harvey and Chadi, 2016; Lockett et al., 2024).

**Finally, findings highlight the importance of policy language, readability, and accessibility.** Policies written in complex, unclear language or buried in bureaucratic jargon can confuse the public, hinder understanding, and potentially fail to curb or even increase youth vaping (Kurtzman et al., 2022; Greiner Safi et al., 2023; Park et al., 2017). Public health materials written in comprehensive, lay language enhance transparency, helping parents, educators, and youth understand rules and take appropriate action (Rudd et al., 2004; Peck et al., 2020). Clear communication is vital for raising awareness about vaping risks and ensuring compliance with preventive measures. Similarly, limited awareness significantly hinders policy effectiveness (Cerruti et al., 2019). With online searches as the main way to access information, policies buried in search results become nearly invisible, preventing parents, educators, and others from finding crucial regulations to combat youth vaping. Policy visibility is essential, as effectiveness depends on how widely policies are distributed, understood, and enforced (Galanti et al., 2013). Accessible policies not only empower individuals with knowledge but also foster a sense of collective responsibility in the

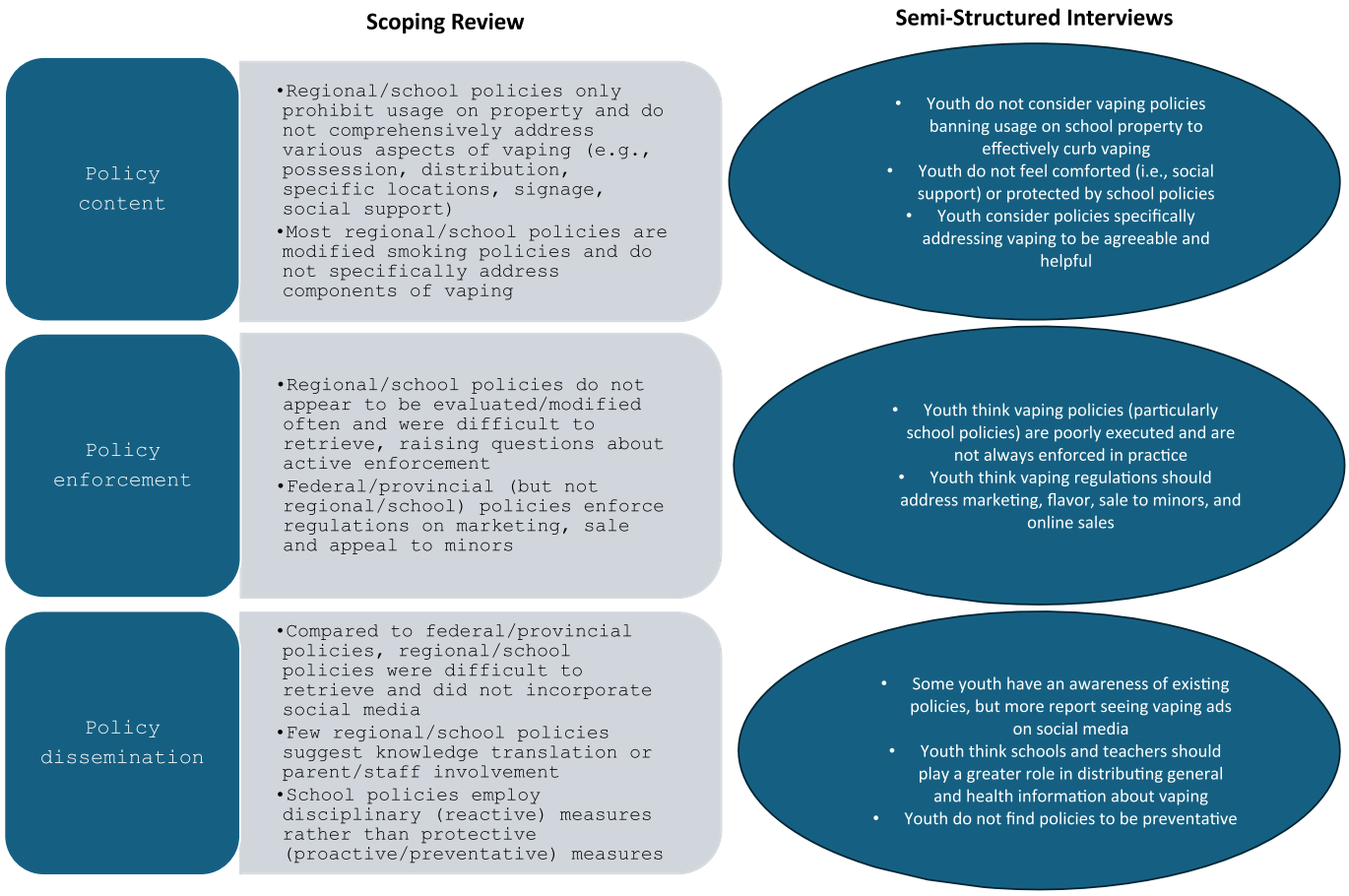


**Fig. 2.** Triangulation of findings from the scoping review and semi-structured interviews with youth on vaping policies in the Okanagan region of British Columbia, Canada: Policy content, enforcement, and dissemination.

community's efforts to safeguard young people from the dangers of vaping.

In sum, these findings highlight the need for clear, youth-centered policies that address consumption, possession, penalties, and target audiences in plain language (Pollack Porter et al., 2018). Paired with youth-focused educational measures like assemblies, social media campaigns, and school resources, such strategies can improve policy awareness and reduce disparities in vapor product use, exposure, and access.

### 4.3. Future directions for research and practice

Beyond policy improvements, future research and practice must address gaps in understanding how youth vaping behaviors evolve and how policies are applied in real-world contexts. Future research should explore how policy effectiveness varies across different populations and settings, particularly among marginalized groups who may experience unique barriers to compliance or access. Longitudinal studies tracking the evolution of vaping policies and youth behaviors would offer insights into policy effectiveness and evolving youth needs, particularly in light of historical events like the COVID-19 pandemic (Sharma et al., 2023). Research should also include concrete measures to evaluate policy efficacy (e.g., impact on vaping rates), explore experiences of additional populations like young adults, and cover multiple regions or jurisdictions. Studies could also examine regional variations in vaping based on policies and assess awareness of policies among youth, families, educators, and the public.

In practice, interdisciplinary collaboration among researchers, policymakers, educators, healthcare professionals, and community organizations is essential to develop evidence-based strategies informed by policy analysis, behavioral research, and public health initiatives (Lockett et al., 2024). Future practice should prioritize community-driven and culturally responsive approaches that address barriers to access and awareness, such as multilingual interventions that respect cultural traditions and address social determinants of health: e.g., Indigenous-led programs that integrate traditional wellness practices (Struik et al., 2023). Gamified educational tools and interactive resources can better engage youth, while partnerships with local organizations and healthcare providers can expand outreach through workshops and cessation programs. Additionally, holding the vaping industry accountable for youth-targeted marketing and collaborating with tech companies to reduce pro-vaping content online are critical steps. Engaging youth in research and policymaking ensures interventions remain relevant and effective in an evolving landscape (Wyman et al., 2021).

### 4.4. Limitations and strengths

The present study has several limitations. First, some regional policies were unavailable, raising concerns about whether parents, youth, and educators are even aware of them. Although we requested records from the provincial government, future efforts might benefit from directly contacting schools and municipalities. Second, the lack of concrete measures of policy effectiveness limits our ability to assess their impact on vaping. Third, the study's narrow focus on one region, small youth sample, and exclusion of adults may limit the generalizability of findings beyond this context. Finally, more targeted qualitative interview questions on school and other policy specifics could have provided

richer insights.

Nevertheless, this study presents several strengths. First, it uniquely triangulates policy data with youth accounts, offering a multifaceted consideration of policy. Second, the policy review strategy intentionally uses Google to mirror how the public, e.g., educators, youth, parents, and administrators, typically search for policies. This approach ensures that the study reflects real-world conditions by accessing policies as they are commonly found. Third, this study provides a comprehensive framework for evaluating regional vaping policies, efficiently covering demand- and supply-specific aspects. Aligning policy and youth locations geographically and temporally enabled meaningful comparisons. Finally, using a youth-centered, qualitative interview approach captured often-overlooked opinions and experiences, while including a diverse age range (12–18) provided varied insights.

## 5. Conclusion

Our study provides an example of critical gaps in vaping policies at multiple jurisdictional levels, underscoring the need for comprehensive, vaping-specific, and adaptable approaches to address the global youth vaping epidemic. Findings highlight broader issues likely relevant across other jurisdictions, particularly the need for accessible, clear, and proactive measures, integrating educational outreach, regulatory enforcement, and youth engagement to ensure effectiveness. By addressing these gaps, policymakers globally can implement more effective and equitable measures to combat youth vaping and its associated risks.

## Ethics approval

The authors declare that they have obtained ethics approval from an appropriately constituted ethics committee/institutional review board where the research entailed animal or human participation. The study was reviewed by and received ethics clearance through a University of British Columbia Okanagan Behavioral Research Ethics Board (#H20–02312).

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## CRediT authorship contribution statement

**Ramona H. Sharma:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sarah J. Dow-Fleisner:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Laura L. Struik:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Conceptualization.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Appendix A. Example Search Strategy

ProQuest Canadian Newsstream.

Limits: (**Date**: From 2000 to 2020;

**Source type**: Blogs, Podcasts, & Websites, Newspapers, Other Sources, Reports;

**Document type**: Front Page/Cover Story, Government & Official Document, News;

**Language**: English).

Search Strategy:

1. (Vaporizer OR Vaping OR Vape* OR *E*-Cigarette OR Electronic Cigarette OR Electronic Nicotine Delivery Device OR Electronic Nicotine Delivery System OR JUUL OR Mod OR Pod OR E-Cig OR Cartomiser OR Cigalike OR Direct To Lung OR E-Smoking OR E-Pipe) - (99976)
2. (Nicotine) - (31809)
3. 1 and 2 - (4643)
4. (Regulation* OR Order* OR Law OR Policy* OR Act OR Bylaw) - (10960926)
5. (Prohibit* OR Penalty OR Fine OR Illegal) - (3949304)
6. 4 or 5 - (13292410)
7. 3 and 6 - (3314)
8. limit 7 to ((include: newspapers, blogs, podcasts, websites, other sources, magazines) and (date range: 01/01/2000 to 11/09/2020) and (document type: news) and (location: Canada) and (language: English) - (1049)

## Appendix B. List of Issuing Bodies for Regional Policies

The following 9 **cities/municipalities**, 7 *secondary school districts*, 1 health authority, and 7 *postsecondary institutions* were considered to be part of the Okanagan region:

- City of Kelowna
- City of Kamloops
- District of Coldstream
- District of Lake Country
- City of Merritt
- City of Oliver
- City of Penticton
- City of Revelstoke
- City of Salmon Arm
- City of Vernon
- Town of Keremeos
- Village of Lumby
- Interior Health Authority
- Career College
- College of the Rockies
- First College
- Nicola Valley Institute of Technology
- Okanagan College
- The University of British Columbia, Okanagan campus
- Thompson Rivers University
- School District 19 (Revelstoke)
- School District 22 (Vernon)

- School District 23 (Kelowna)
- School District 53 (Oliver)
- School District 58 (Merritt)
- School District 67 (Penticton)
- School District 83 (Salmon Arm)

## Data availability

The data that has been used is confidential.

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