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Experiences of Nicotine Users Motivated to Quit During the COVID-19 Pandemic: A Secondary Qualitative Analysis

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EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

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ABSTRACT

Objectives: The COVID-19 pandemic has brought to light a variety of key factors that affect tobacco use, including behavioral patterns, social support and connection, and physical and mental health. What we do not know is how those motivated to quit were impacted by the pandemic. As such, understanding the unique experiences and needs of people motivated to quit smoking or vaping during the COVID-19 pandemic is critical. The aim of this study was to examine the cessation experiences of nicotine users during the COVID-19 pandemic. **Design**: We conducted an auto-driven qualitative secondary analysis of semi-structured interviews with individuals engaged in cigarette smoking, dual use, or e-cigarette use. **Setting**: British Columbia, Canada. **Participants**: Relevant data were drawn from 33 participants out of the primary study's 80-participant sample pool. **Measures**: Interview questions explored barriers and facilitators to quitting nicotine use. We then used an auto-driven qualitative secondary analysis approach to identify emergent themes and subthemes surrounding pandemic-specific barriers and facilitators to quitting, and unique needs for cessation support in the context of the COVID-19 pandemic. **Results**: Pandemic-specific barriers included lifestyle limitations and poor mental health due to isolation. Facilitators to quitting during the pandemic included reduced access and opportunities to use nicotine products, as well as time for personal reflection on nicotine use behaviors. Suggestions for cessation programming included a primary focus on enhancing social support features (e.g., discussion forums, support groups), followed by increasing awareness of the benefits of quitting, and enhancing visibility of resources available to support quitting. **Conclusions:** The findings provide directions for how cessation supports can be tailored to better meet the needs of users motivated to quit during and beyond the COVID-19 pandemic.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Our qualitative approach provides detailed data on the unique needs of nicotine users hoping to quit in both pandemic and post-pandemic contexts.
- We recruited a diverse array of participants, including smokers, vapers, and dual users.
- The larger study that the present data is derived from was not designed to investigate quitting during the pandemic, which may impact generalizability.

INTRODUCTION

Globally, nicotine addiction continues to remain one of the most significant public health threats [1]. However, many nicotine users of all ages report a desire to quit [2]. Environmental and psychosocial factors play a key role in shaping cessation and reduction trajectories, including the availability of appropriate and accessible supports, diversity and accessibility of available nicotine products, federal and regional policies, historical contexts such as ongoing economic, public health, and socio-political events, and individual characteristics such as mental health, income, education, and social support [3]. One example of a significant and multifaceted environmental factor that has influenced tobacco use behaviors is the recent COVID-19 pandemic. Indeed, tobacco use patterns and cessation trajectories appear to have shifted in various directions because of the pandemic.

For some tobacco users, the pandemic correlated with an increase in use. For example, a higher proportion of Canadians reported vaping on a daily basis compared with before the pandemic in 2019. According to the 2021 Canadian Tobacco and Nicotine Survey (4), among those who reported vaping in the past 30 days, 55% responded that they vaped on a daily basis, compared with 44% in 2019 [4]. In relation to cigarette smoking, 3% of Canadian smokers reported an increase in smoking [5]. This increase in use is disproportionate among certain groups, and researchers have brought forward how the pandemic has interacted with and subsequently enhanced pre-pandemic tobacco-related health risks among disadvantaged groups [6].

Mental health appears to play a major role in increased use of tobacco products during the pandemic. In Canada, individuals who reported having fair or poor mental health in 2020 were more likely to have increased their use of nicotine products [7]. Among Canadians who vaped in the past 30 days in 2021, 18% reported that their main reason for vaping was to reduce stress and anxiety [8]. Stress reduction was more commonly reported as the main reason for vaping by youth aged 15 to 19 in 2020 (33%) compared to 2019 (21%) [8]. Similar to vaping, many cigarette users have discussed experiencing a sense of relief from smoking during the pandemic – distressing emotions such as anxiety and depression skyrocketed during the pandemic, and as such, individuals started smoking more to cope and experience a sense of calm [9].

By contrast, some nicotine users experienced a decrease in their nicotine use, an increase in their motivation to quit, or experienced no change. For example, in 2020, about 14% of young Canadians reported vaping on a regular basis — a slight decrease from 15% in 2019 [8, 10]. Cigarette use decreased considerably between 2019 and 2020, with an overall 12% per cent drop among those aged 25 and older, and a 5% drop among those aged 15-19 [10, 8]. In addition, in 2020, 37% of Canadians aged 15 and over who reported vaping daily, and 39% of those in the same age demographic that smoked cigarettes daily, made at least one quit attempt lasting 24 hours [8]. Data from the Netherlands has demonstrated that quit smoking motivations during the pandemic generally surrounded perceptions of being at risk for developing severe illness, smokers being at higher risk than non-smokers, needing to quit smoking to reduce complaints during isolating with others in the household [11].

The COVID-19 pandemic has facilitated the emergence of alternative health care modalities; more people are turning to website, SMS, and/or telephone-based healthcare modalities, including resources for cessation support [12]. Simultaneously, the COVID-19 pandemic led to a reduction in existing cessation supports due to closures and staffing, infrastructure, and resource shortages [13].

These rapid changes to available cessation resources and programming likely affected the trajectory of those trying to quit. Understanding how cessation was impacted and how individuals' cessation needs shifted is critical to informing the development of more responsive and adaptive cessation resources that take into account the unique influence of the pandemic [14]. As a result, the aim of this study is to explore the cessation experiences of nicotine users motivated to quit during the COVID-19 pandemic.

METHODS

Design

We employed auto-driven qualitative secondary analysis, which is an extended investigation of qualitative data gathered by the primary team of researchers [15]. In this vein, we aimed to extend our understanding of participant responses to questions posed in the primary study questions. More specifically, we sought to understand COVID-19-specific barriers and facilitators to quitting nicotine, which builds on the following questions asked in the primary research study: 1) "What might be some barriers to quitting?"; 2) "What are other aspects of your life that help facilitate reducing/quitting?" Ethical approval was received from the Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145). The design and analyses within this study were not pre-registered on a publicly available platform; as such, the results should be considered exploratory. The Standards for Reporting Qualitative Research (SRQR) reporting guidelines were used for quality appraisal [16]. Reflexivity was maintained by the research team throughout data analysis and manuscript writing by recording, discussing, and challenging established assumptions at all data collection and analysis stages.

Primary Study

In the primary study, we conducted semi-structured interviews with 80 participants across British Columbia (BC), Canada between May to August 2021; these lasted between 30-60 minutes in duration. The purpose of this study was to understand the cessation needs of BC residents to inform improvements for online cessation programming (see online supplementary file 1 for the interview guide, which includes details of other question topics, such as motivations behind participants' nicotine use and cessation patterns and needs with respect to a free, provincially-funded online cessation support, QuitNow). Eligible participants were recruited through targeted Facebook and Instagram ads via a third party (PH1 Research). Participants met the following eligibility criteria: motivated to quit vaping or smoking, ages 16 and over, able to communicate in English, and able to provide informed consent. Participants completed a demographic survey and a 60-minute, audio-recorded, UBC Zoom interview, after which they received a $50 online gift card to thank them for their time and input. These interviews were transcribed and analyzed by the research team using NVivo qualitative data analysis software. Participant interviews were undertaken by four researchers (author RS and further individuals named in Acknowledgements) of various disciplines (social work, nursing, kinesiology) who received identical training and utilized a pre-established interview guide to minimize individual differences in interview outcomes as a result of interviewer characteristics. Conscious efforts were made to seek elaboration and clarification from participants and not to accept potentially common assumptions at face value. No authors were known to any participants of this research prior to undertaking the study.

Data Collection

Two researchers (authors RS and DR) collected data on participant experiences surrounding COVID-19 and its influence on participant nicotine use and cessation needs. In each NVivo demographic file (n=80) from the primary study, keywords such as *"COVID-19", "pandemic", "COVID", "lockdown", "isolation",* "*home*", *"stay AND home", "public AND health AND order", "health AND order", "virtual", "remote", "online", "Zoom", "work AND home", "not AND working", "working AND less"* were searched. In total, 33 participants discussed the impact of COVID-19 on their cessation experiences. All of these responses were collected and compiled in a Word document.

Data Analysis

Upon compilation of participant responses, two collaborative coding sessions were held and, via inductive content analysis [17], a codebook was created and applied to all relevant responses to identify common patterns among participant cessation experiences and needs during the pandemic. We then charted all themes and subthemes onto Excel software to allow for visualization and comparison of major findings. Finally, we disaggregated all identified themes and subthemes by gender, nicotine user type, and age, but did not find significant differences in theme endorsement between the stated groups.

Patient and Public Involvement

Participants were not involved in any aspect of the study design, recruitment, or conduct. Upon recruitment, participants were asked if they would like to receive the research findings via email upon completion of the study; findings will be disseminated through a written summary to participants who opted in. Academic outputs will be disseminated through social media and community networks.

RESULTS

Sample

We gathered COVID-19 related data from 33 participants. Participants included in this study were primarily male (55%), and non-Indigenous (73%). Most of the sample was between 16 and 29 years old (57%) (16-18, 18%; 19-24, 21%; 25-29, 18%), with the remaining 43% aged 30 and older. The majority of participants were dual users of both combustible cigarettes and e-cigarettes (40%), followed by only smokers (33%), and only vapers (27%).

Themes

From participant reports, we found several themes that fit within the following three categories: (1) barriers to quitting nicotine use during the pandemic; (2) facilitators to quitting or reducing nicotine use during the pandemic; and (3) suggestions for improving cessation programming during the pandemic. The breakdown of these categories and associated themes, as well as the frequency of endorsement are outlined in Table 1.

Table 1. Themes and subthemes identified in participant responses and their associated frequencies

Themes (n, %)	Subthemes	n(%)
Barriers to quitting nicotine use during the pandemic (n=21, 64%)	Isolation lent to lifestyle limitations (fewer activities, increased boredom, and minimal socializing)	16(48)
	Isolation increased stress and fostered poor mental health	8(24)
Facilitators to quit or reduce nicotine use during the pandemic (n=11, 33%)	Pandemic reduced accessibility and opportunities to smoke/vape (fewer events, less social pressure, decreased access, etc.)	6(18)
	Pandemic prompted reflection on smoking/vaping behaviours	5(15)
Suggestions for improving cessation programming during the pandemic (n=19, 58%)	Enhance social support features (e.g., hosting virtual support via zoom and discussion forums; offering small in-person support groups)	11(33)
	Increase awareness of quitting benefits in pandemic context (e.g., impacts of smoking/vaping on COVID-19 health outcomes and financial implications during COVID-19 unemployment)	7(21)
	Increase awareness of resources and advice for those trying to quit during the pandemic	5(15)

Barriers to quitting nicotine use during the pandemic

Numerous participants (64%) reported experiencing barriers to quitting nicotine use during the pandemic, particularly in relation to isolation. Of the individuals who experienced barriers to quitting, approximately half (48%) said the lifestyle limitations they experienced due to the pandemic were a barrier for them. Participants described how isolation measures resulted in a reduction in activities individuals could attend, limitations on socializing, and subsequently, an increase in boredom:

> 'Last year for me personally, my partner and I planned on quitting and then COVID happened, and we didn't have anything to keep ourselves entertained so that's how we just fell back into the pit' (Participant 84, female).

In this vein, individuals saw smoking and vaping as an activity to pass the time while being confined to their home environment, despite many not wanting to smoke or vape. A couple of participants even reported that nicotine usage provided them with a reason to go outside during the pandemic when they were otherwise advised to remain indoors. Furthermore, some participants reported that being confined to their home environment created an unconducive environment for cessation, due to a lack of in-person support from family members, or being trapped in an environment with smokers:

> *'I never smoked before COVID, but with COVID you're hanging out with the same people in the same bubble so you're doing what everyone is doing together' (Participant 29, female).*

Another prominent barrier to quitting was an elevated level of stress during the pandemic and associated with this, poor mental health. While some participants just spoke of general stress due to the

pandemic, several participants identified employment and school as specific stressors during the pandemic. According to nearly a quarter (24%) of participants, nicotine usage helped individuals cope with the stress they were experiencing:

> 'I'm working from home because of COVID. When I feel under a lot of pressure, I reach towards cigarettes...' (Participant 76, male).

Facilitators to quitting or reducing nicotine use during the pandemic

A third (33%) of participants reported experiencing facilitators for quitting nicotine use during the pandemic. A major theme reported by 18% of participants was that the pandemic reduced accessibility and opportunities to smoke/vape. A few individuals reported that this was because they were not able to attend social gatherings (e.g., parties) that were often associated with peer pressure to smoke or vape:

> '... if you smoke or vape in a more social setting, that all goes out the window with the Coronavirus...' (Participant 13, male).

In addition, a few individuals discussed how reduced access to nicotine-related products due to store closures, lockdowns, and isolation measures made it easier for them to reduce their nicotine usage:

> 'My vape broke at the beginning of the pandemic when all the stores were closed and nobody was going anywhere. I wasn't able to fix it, and I couldn't exactly ask my parents to go buy me a new vape, so I ended up pretty much quitting around then which was not fun but in hindsight was a stroke of luck' (Participant 31, male).

Another facilitator commonly reported (15%) by participants was that the pandemic prompted individuals to become more introspective on their smoking/vaping behaviours. Individuals approached this with a variety of motivations. For example, one individual said witnessing someone in their social circle quit during the pandemic increased their own motivation for quitting; another individual stated that they wanted to quit to improve their lung health given the elevated negative respiratory impacts of COVID-19 on smokers; and a third individual said they wanted to save money for post-pandemic activities:

> '… I'm saving up for travelling right now and not for vaping so much so if I save enough money… I can actually go home after this silly pandemic is over' (Participant 73, male).

Suggestions for improving cessation programming during the pandemic

Over half of participants (55%) made comments in reference to improvements they would have liked to see with online cessation supports during COVID-19. Nicotine users had a variety of suggestions to tailor cessation supports for the pandemic context. The most common recommendation (33%) was to enhance social support features within cessation programming. The loss of social connection during the

pandemic emphasized the need to ensure that social support was available to nicotine users in this context. In addition to in-person support groups, individuals advised that programming incorporates virtual support in the form of meetings via Zoom or online discussion forums to connect with others:

> 'I think organizing Zoom meetings or small group chats where you can say what you've accomplished and how you're struggling right now and then maybe create a few friends who are all trying to quit together' (Participant 37, male).

A large number of participants (21%) also suggested that programming increase awareness of the benefits of quitting specifically in relation to the pandemic. Individuals believed that since COVID-19 is a respiratory disease, widely disseminating information on the health impacts of COVID-19 on people who smoke/vape would resonate with users. Participants also recommended including the financial implications of smoking/vaping as people were more attentive to money-related matters during the times of unemployment from COVID-19 layoffs:

> 'I guarantee if people are scrolling through this, and they see the average smoker spends $3,000 a year on cigarettes, especially during COVID when people are losing their jobs, that would be a pretty big selling point' (Participant 64, male).

A number of participants (15%) also highlighted a need for increased awareness of resources and advice for those trying to quit during the pandemic. Suggestions for achieving this included advertising through the means of social media and at locations that coincided with the lifestyle of the public during the pandemic (e.g., grocery stores and health centres). Additionally, as the pandemic resulted in boredom, people advised that suggestions on activities individuals could use to replace smoking and vaping would help people fill their free time:

> 'I think maybe having a different strategy for people that are more isolated throughout COVID versus once restrictions start easing out so maybe they could recommend some other strategies and distractions, let's say as an example, going for a walk' (Participant 29, female).

DISCUSSION

The present study highlights the impacts of the COVID-19 pandemic on individual nicotine cessation journeys. In addition, it establishes the importance of cessation support remaining up-to-date and taking into account the new and ever-changing psychosocial and socio-environmental factors that come with a global crisis. Finally, it speaks to the significance of centering participant voices and learning firsthand from nicotine users about their unique needs as it relates to barriers and facilitators to successfully quitting nicotine use.

The pandemic revealed unique vulnerabilities of nicotine users that were not previously emphasized, such as the effects of boredom, stress, and isolation. Isolation in particular was a noteworthy barrier to quitting tobacco use according to this study. Many participants talked about how this isolation resulted in immense boredom. Boredom has been found to play a key role in increased

alcohol and cannabis consumption during the pandemic [18], and our findings reveal that this similarly applies to use of tobacco products. The inability to engage in routine activities (e.g., enjoy outdoor activities, and engage in their regular exercise routine) that often served to distract them from using nicotine resulted in many participants turning to nicotine to help them pass the time. This finding is in line with other research identifying how nicotine use tends to increase when routines are disrupted and boredom is resultantly increased [19-20]. The ongoing impact of isolation cannot be underestimated, and our study findings foreground its role on tobacco use behaviors, which is largely negative.

It is also interesting that individuals spoke about continuing to smoke in order to go outside, versus going outside in order to smoke. The pandemic appeared to create a shift in focus (being outside rather than satisfying a craving) in relation to smoking. Having to go outside for a smoke has been previously perceived as a "hassle", particularly after public smoke free bans were in place [21]. However, going outside for a smoke during the pandemic appears to have shifted this perspective among some smokers, wherein smoking was perceived as something that enabled a needed respite from the monotony of being indoors. Public health measures would benefit from considering the nature of tobacco use when implementing stay at home orders, and particularly consider how removing the ability to leave one's home can perpetuate health risk behaviors, like smoking. Given that distractions have been identified as a key affordance to quitting [22], ensuring that healthy distractions, for example games and opportunities for inter-user communication embedded within app-based quit supports, are accessible and available during a pandemic is essential.

Some individuals found that the isolation associated with the pandemic made it easier to quit because there were fewer opportunities to experience social ("peer") pressures around nicotine use; there were fewer parties and gatherings, and fewer opportunities to socialize with others who smoke and/or vape. On the other hand, living with other smokers and/or vapers and not being able to leave a shared environment due to lockdown measures proved a major barrier to quitting. Our findings corroborate existing studies that highlight how the opinions and behaviors of peers play a significant role in nicotine use maintenance [23]. However, as isolation and not seeing peers proved to be both a risk factor and a protective factor for increasing nicotine use, it is fundamental to note that that these findings are pertaining to exposure to social influences and contexts, and not social support. Social support is an integral element of cessation [24], and reduced connection with others due to the pandemic actually places an even greater weight on the importance of social support. In this vein, and according to the findings, the pandemic increased the perception that there should be priority on enhancing social support in existing cessation support programs, such as through forums, virtual and in-person support groups, coaching, and buddy systems, among others.

Although participants spoke about general pandemic-related stress and its impact on increased tobacco use, many participants also discussed stress specifically associated with working from home or being laid off. Indeed, the pandemic introduced a myriad of sources of stress to the general population, including layoffs, isolation measures, reduced income, and reduced job security [24]. Previous literature has found that increased stress and anxiety about employment and finances is associated with greater nicotine consumption [25]. In this vein, it is likely that nicotine users smoked or vaped more to cope with financial and employment-related stress, which reveals how nicotine users are particularly vulnerable from a health risk perspective in the context of job instability. It is also interesting that some

nicotine users decided to quit or reduce their smoking or vaping in order to save money. In this vein, emphasizing the financial benefits of quitting may be particularly relevant in this context.

The findings of this study indicate the need for interventions to incorporate elements that address the unique susceptibilities experienced by users, such as the effects of isolation, stress, and boredom, as these are traits and states that are likely to persist beyond a pandemic context. Examples of such elements may include tools and strategies such as gamification to incorporate distractions, or tailored financial incentives, such as saving money for something meaningful that the nicotine user may like to purchase. In addition, the findings emphasize the need to encourage and support quitting nicotine use by offering online and hybrid cessation services, as well as utilizing novel modalities for information dissemination (e.g., Instagram, Facebook, and TikTok ads, Zoom groups, app-based cessation programs) [26, 11]. This is important because the literature has demonstrated that the pandemic caused significant drops in traditional, in-person cessation program enrolments [26]. By implementing participant suggestions, many of the barriers stated by individuals could potentially be eliminated or minimized. Finally, when developing new programs for cessation, we must also ensure that people who face greater systemic barriers, such as Indigenous and rural populations, can access these supports [27].

Strengths and Limitations

This research has several limitations. First, interviews are subject to recall and social desirability biases. Second, as participants were solely from BC, Canada, participants' experiences may not be representative of experiences in a broader group of nicotine users. In addition, it must be noted that BC implemented pandemic response measures differentially from other provinces, which may limit the transferability of the findings to individuals in areas where the response measures were different from that of BC. Third, since we did not directly ask questions about the COVID-19 pandemic, not all participants from the primary project provided their opinions. It is possible more participants would have provided in-depth information if intentional questions surrounding the pandemic had been incorporated into the original interviews. Fourth, due to our selection of keywords, it is possible some statements about COVID-19 and the pandemic could have been missed. Fifth, given that data were collected during a specific time period (May to August 2021), sociocultural and policy changes evolving with the pandemic may have continued to influence cessation needs beyond the scope of these findings. Finally, our sample may be unique in that participants may belong to a higher socioeconomic status than the general population of nicotine users worldwide as indicated by access to a desktop or mobile device and an Internet connection. Despite these limitations, this study has some noteworthy strengths. First, drawing secondary data from a very large primary study allowed for maximum variation across a range of sample characteristics, providing a rich dataset from which to develop themes. Next, our use of inductive qualitative methods enabled a detailed analytical approach. Finally, collecting rich interview data over months allowed us to capture nuanced, as well as consistent themes in the context of an ever-changing pandemic landscape in real time.

CONCLUSIONS

This qualitative study provided a snapshot into the lived experiences, needs, and desires of nicotine users motivated to quit during the COVID-19 pandemic. While isolation from the pandemic lent to some facilitators to quitting (e.g., reduced exposure to social pressures), participants reported a broader number of barriers to quitting associated with isolation. In addition, stress, especially financial stress, associated with the pandemic played a critical role in disrupting cessation efforts. Cessation programming would benefit from considering these unique impacts of the pandemic on cessation.

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COMPETING INTERESTS STATEMENT

The authors have no conflicts of interest to declare.

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AUTHOR CONTRIBUTIONS

RS oversaw participant recruitment, data collection, interview transcription, primary data analysis, and conceptualization of the manuscript. LS, as senior author, conceptualized and designed the greater project and research protocol, and obtained research funding. DR led conduction of secondary data analysis. RS and DR jointly developed the manuscript, with LS overseeing and providing feedback on draft versions. All authors have seen and approved the final version.

PATIENT CONSENT

Not required.

ETHICAL APPROVAL

Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145).

DATA SHARING STATEMENT

We have uploaded the semi-structured interview guide as a Supplementary File. To protect participant identities, we do not intend to share participant interview transcripts in a repository. All requests for data sharing may be directed to the authors.

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QUITNOW RESEARCH STUDY PROTOCOL

INTERVIEW GUIDE FOR NON-INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

NOTE:

- Try your best to interview the participant as close to 1 hour as you can
  - Take your time – if you are not rushed, then participants will feel less rushed to answer your questions
  - Pause for a few seconds after participants answer – this will prompt participants to add more to their answer. Saying something like "*mhm…*" after they answer as if you are expecting them to say more.
  - Encourage participants to take their time with their responses.
- Encourage creative thinking
  - Do not limit participants with what they believe is possible. People do their best creative thinking when they do not think about practical constraints.
- Try to ask as many open-ended (vs. Closed-ended) questions as possible
  - Example of a closed-ended question: *Do you like that?*
  - Example of an open-ended question: *What do you like about that?*
- Phrases you can use to prompt participants to talk more:
  - *Tell me more about ____.*
  - *How can you see ____ being incorporated into the website?*
  - *How can you see ___ (flaw of the website)___ being fixed?*
  - *What else?*
- Responses to difficult answers:
  - Participant: there's nothing I don't like about it! It's great!
    - Answer: *"What's so great about it?"*
    - Answer: *"What can make it better?"*
    - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*
    - Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

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Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it
    - *If they haven't had a chance to do it, screen share the questionnaire and complete it with them.
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Consent – ongoing process (can discontinue at any point)
6. Questions?
7. Interview is being recorded – is that okay? *start recording*
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How did (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
6. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
7. How would you like to receive support on QuitNow?
8. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
9. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
10. What do you think of incorporating support for quitting e-cigarettes on QuitNow?

   a. How should it be different to cigarette cessation support?
   b. How should it be similar?
11. What additional features would you like to see on QuitNow?
12. Do you have any suggestions for improving the look and feel of QuitNow?
13. Would you recommend QuitNow to your friends/family? Why or why not?
14. How could we get the word out that QuitNow exists?
15. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
16. Outside of QuitNow, what are other aspects of your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
17. For current QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
18. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
19. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?
20. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
21. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

- Which vendor would you like to receive your $50 honorarium for?
- Would you live to be contacted to participate in a follow-up study?
- Would you like to receive the results of the study once they are published?

After the Interview

1. Update spreadsheet (OneDrive):
   a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up contact, would like to receive the results of the study)
   b. Record if they would like to participate in a follow up focus group
   c. Record if they would like to receive results of the study
2. Upload to OneDrive
   a. Recording
   b. Questionnaire
3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
   a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
   b. E.g., "#23, F, N" for participant number 23, female, QuitNow non-user

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INTERVIEW GUIDE FOR NON-INDIGENOUS POTENTIAL QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
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4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

NOTE:

- Try your best to interview the participant as close to 1 hour as you can
  - Take your time – if you are not rushed, then participants will feel less rushed to answer your questions
  - Pause for a few seconds after participants answer – this will prompt participants to add more to their answer. Saying something like "*mhm…*" after they answer as if you are expecting them to say more.
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  - *Tell me more about ____.*
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  - *What else?*
- Responses to difficult answers:
  - Participant: there's nothing I don't like about it! It's great!
    - Answer: *"What's so great about it?"*
    - Answer: *"What can make it better?"*
    - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*

Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it

- *If they haven't had a chance to do it, screen share the questionnaire and complete it with them.

4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Consent – ongoing process (can discontinue at any point)
6. Questions?
7. Interview is being recorded – is that okay? *start recording*
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

1. Let's start with the overall look and feel.
    a. What is your initial reaction?
    b. How could it be improved?
2. What aspects of the website did you like?
    a. What would you find helpful in quitting smoking?
    b. What would keep you coming back?
3. What did you not like?
    a. What are the major limitations of the site?
    b. What makes you not want to come back to it?
4. How would you like to receive support on QuitNow?
5. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
6. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
7. What do you think of incorporating support for quitting e-cigarettes on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
8. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
9. What additional features would you like to see on QuitNow?
10. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
11. Would you recommend QuitNow to your friends/family? Why or why not?
12. What might be some barriers (e.g., stress, friends/family who smoke) to quitting? How could/should these be mitigated by QuitNow?

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13. Would you be more likely to use QuitNow on your mobile device or laptop?
14. If you could have anything you wanted, what would you want QuitNow have/do for you?
15. How could we get the word out that QuitNow exists?
16. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
17. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

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1. Update spreadsheet (OneDrive):
    a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up, would like results of the study)
    b. Record if they would like to participate in a follow up focus group
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2. Upload to OneDrive
    a. Recording
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3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
    a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
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INTERVIEW GUIDE FOR INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

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Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it; if they haven't had a chance to do it, go through it on share screen
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
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QuitNow Questions (~50 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. We understand that you identify as Indigenous. Which nation do you belong to?
6. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
7. What other aspects of your nation's culture or of Indigenous culture in general might be honored in QuitNow?
8. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
    e. What aspects of QuitNow resonate with your nation's culture or Indigenous culture in general as you understand it?

9. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
    d. What aspects of QuitNow do not resonate with your nation's culture or Indigenous culture in general as you understand it? How could this be addressed?
10. How would you like to receive social support on QuitNow?
11. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
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12. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
13. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
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14. What additional features would you like to see on QuitNow?
15. Do you have any suggestions for improving the look and feel of QuitNow?
16. Would you recommend QuitNow to your friends/family? Why or why not?
17. How could we get the word out that QuitNow exists?
18. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
19. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
20. For QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
21. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
22. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?

Closing: final comments (5 minutes)

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way' limləmt,| thank you

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4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
6. Confirm that they have looked through the QuitNow website
7. Interview is being recorded – is that okay?
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QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

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6. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?

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7. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
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8. You mentioned that you identify as Indigenous. Which nation do you belong to?
9. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
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way' limləmt,| thank you

Reporting checklist for qualitative study.

Based on the SRQR guidelines.

EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

AUTHORS
-Ramona H. Sharma, BSc, MSW Student - School of Social Work, The University of British Columbia (Okanagan Campus), Kelowna, Canada
-Danielle Rodberg, BSN Student - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada
-Laura L. Struik, PhD, Assistant Professor - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada

		Reporting Item	Page Number
Title			
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1-4
Abstract			
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	2
Introduction			
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	3-4

Supplementary material

Purpose or research question	#4	Purpose of the study and specific objectives or questions	4
Methods			
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	4
Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	4-5
Context	#7	Setting / site and salient contextual factors; rationale	3-5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	4
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative	4-5

		process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	4-5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5-6
Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	4-5
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	4-5
Results/findings			
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	5-8
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6-8
Discussion			
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application /	8-10

		generalizability; identification of unique contributions(s) to scholarship in a discipline or field	
Limitations	#19	Trustworthiness and limitations of findings	10
Other			
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	11
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	11

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Experiences of Nicotine Users Motivated to Quit During the COVID-19 Pandemic: A Secondary Qualitative Analysis

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EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

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ABSTRACT

Objectives: The COVID-19 pandemic has brought to light a variety of key factors that affect tobacco use, including behavioral patterns, social support and connection, and physical and mental health. What we do not know is how those motivated to quit were impacted by the pandemic. As such, understanding the unique experiences and needs of people motivated to quit smoking or vaping during the COVID-19 pandemic is critical. The aim of this study was to examine the cessation experiences of nicotine users during the COVID-19 pandemic. **Design**: We conducted a supplementary secondary analysis of primary qualitative data, i.e., semi-structured interviews with individuals engaged in cigarette use (smoking), e-cigarette use (vaping), and dual use. **Setting**: British Columbia, Canada. **Participants**: Relevant data were drawn from 33 participants out of the primary study's 80-participant sample pool. **Measures**: Interview questions explored barriers and facilitators to quitting nicotine use. We then used an auto-driven qualitative secondary analysis approach to identify relevant and additional emergent themes and subthemes surrounding pandemic-specific barriers and facilitators to quitting, and unique needs for cessation support in the context of the COVID-19 pandemic. **Results**: Pandemic-specific barriers included lifestyle limitations and poor mental health due to isolation. Facilitators to quitting during the pandemic included reduced access and opportunities to use nicotine products, as well as time for personal reflection on nicotine use behaviors. Suggestions for cessation programming included a primary focus on enhancing social support features (e.g., discussion forums, support groups), followed by increasing awareness of the benefits of quitting, and enhancing visibility of resources available to support quitting. **Conclusions:** The findings provide directions for how cessation supports can be tailored to better meet the needs of users motivated to quit during and beyond the COVID-19 pandemic.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Our qualitative approach provides detailed data on the unique needs of nicotine users hoping to quit in both pandemic and post-pandemic contexts.
- We recruited a diverse array of participants, including smokers, vapers, and dual users.
- The larger study that the present data is derived from was not designed to investigate pandemic-specific factors influencing quitting, which may impact generalizability.

INTRODUCTION

Globally, nicotine addiction continues to remain one of the most significant public health threats [1]. However, many nicotine users of all ages report a desire to quit [2]. Environmental and psychosocial factors play a key role in shaping cessation and reduction trajectories, including the availability of appropriate and accessible supports, diversity and accessibility of available nicotine products, federal and regional policies, historical contexts such as ongoing economic, public health, and socio-political events, and individual characteristics such as mental health, income, education, and social support [3]. One example of a significant and multifaceted environmental factor that has influenced tobacco use behaviors is the recent COVID-19 pandemic.

Tobacco use patterns and cessation trajectories appear to have shifted in various directions because of the pandemic with some users reporting an increase in usage and others reporting a decrease in usage. The variability of these reports aligns with changes seen in Canadian vaping rates. According to the Canadian Tobacco and Nicotine Survey (CTNS), youth between the ages of 15 to 19 demonstrated a decrease in vaping with 15% of youth vaping in the past 30 days in 2019 compared to 13% in 2021 [4-5]. However, other age ranges showed an increase in vaping with an increase from 15% to 17% among adults ages 20 to 24 and an increase of 3% to 4% among adults aged 25 and older [4-5]. This increase in use is disproportionate among certain groups, and researchers have brought forward how the pandemic has interacted with and subsequently enhanced pre-pandemic tobacco-related health risks among disadvantaged groups [6].

Mental health appears to play a major role in increased use of tobacco products during the pandemic. In Canada, individuals who reported having fair or poor mental health in 2020 were more likely to have increased their use of nicotine products [7]. Among Canadians who vaped in the past 30 days in 2021, 18% reported that their main reason for vaping was to reduce stress and anxiety [8]. Stress reduction was more commonly reported as the main reason for vaping by youth aged 15 to 19 in 2020 (33%) compared to 2019 (21%) [8]. Similarly, many cigarette users have discussed experiencing a sense of relief from smoking with individuals smoking more to cope with the stress of the pandemic and experience a sense of calm [9].

In contrast, for some nicotine users, the pandemic was accompanied by a decrease in nicotine use and an increase in motivation to quit. From an international lens, global trends show smoking rates have been trending downwards since the onset of the pandemic. In the United States, use of a tobacco product within the past 30 days decreased significantly from 2019 to 2021 among both high school and middle school students from 31% to 13% and 12% to 4%, respectively [10-11]. As well, e-cigarette usage rates among middle to high school students showed momentous decline from 27% to 11% [10-11]. Data from the Netherlands shows smoking cessation motivations were associated with concern regarding heightened risk for developing severe illness and needing to quit to reduce complaints from others in the household during isolation [12]. However, national data from the Netherlands shows minimal declines in smoking across the timeline of the pandemic with adult smoking rates declining from 22% in 2019 to 21% in 2021 [13-14]. Other countries showed more significant reductions, with smoking experiencing a decline in New Zealand from 14% (2019) to 11% (2021), a more significant change than those reported in years prior, and Scotland even more so from 17% (2019) to 11% (2021) [15-17]. Similarly, in the same time period, e-cigarette usage in Scotland declined, with rates shrinking from 7%

to 5%, after remaining at 7% since 2015 [16-17]; by contrast, e-cigarette use in New Zealand increased from 4% to 6% throughout the pandemic [15]. In sum, worldwide, the rates of pandemic nicotine use demonstrate significant variability.

In addition, the COVID-19 pandemic has facilitated the emergence of alternative health care modalities; more people are turning to website, SMS, and/or telephone-based healthcare modalities, including resources for cessation support [12]. Simultaneously, the COVID-19 pandemic led to a reduction in existing cessation supports due to closures and staffing, infrastructure, and resource shortages [18]. These rapid changes to available cessation resources and programming likely affected the trajectory of those trying to quit. Understanding how cessation was impacted and how individuals' cessation needs shifted is critical to informing the development of more responsive and adaptive cessation resources that consider the unique influence of the pandemic [19]. As a result, the aim of this study is to explore the cessation experiences of nicotine users motivated to quit during the COVID-19 pandemic.

METHODS

Design

We conducted a supplementary secondary analysis of primary qualitative data in order to examine participant perspectives and experiences uniquely related to quitting during the COVID-19 pandemic [20]. Our method was auto-driven and data-driven in the sense that COVID-19 was not a topic specifically addressed by our interview guides, but was rather raised by the informants (auto-driven) as discovered after primary data analysis (data-driven). In other words, upon completion of primary data analysis, we noticed a theme of several participants describing novel and unexpected nicotine-related experiences that happened solely due to the pandemic. To explore this in depth and provide voice to the sub-set of participants who discussed COVID-specific experiences, we conducted a post-hoc retrospective interpretation of previously coded data through keyword searching [20]. In addition to identifying general themes as discussed by participants, we sought to understand COVID-19-specific barriers and facilitators to quitting nicotine, which builds on the following questions asked in the primary research study: (1) "What might be some barriers to quitting?"; (2) "What are other aspects of your life that help facilitate reducing/quitting?"

Ethical approval was received from the Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145). The design and analyses within this study were not pre-registered on a publicly available platform; as such, the results should be considered exploratory. The Standards for Reporting Qualitative Research (SRQR) reporting guidelines were used for quality appraisal [16]. Reflexivity was maintained by the research team throughout data analysis and manuscript writing by recording, discussing, and challenging established assumptions at all data collection and analysis stages.

Primary Study

In the primary study, we conducted semi-structured interviews with 80 participants across British Columbia (BC), Canada between May to August 2021; these lasted between 30-60 minutes in duration. The purpose of this study was to understand the cessation needs of BC residents to inform

improvements for online cessation programming (see online supplementary file 1 for the interview guide, which includes details of other question topics, such as motivations behind participants' nicotine use and cessation patterns and needs with respect to a free, provincially funded online cessation support, QuitNow).

Eligible participants were recruited through targeted Facebook and Instagram ads via a third party (PH1 Research). Participants met the following eligibility criteria: motivated to quit vaping or smoking, ages 16 and over, able to communicate in English, and able to provide informed consent. To provide informed consent, individuals who demonstrated interest were emailed an information sheet describing study purposes and procedures, potential benefits/risks of participating, confidentiality, remuneration and funding sources, researcher contact information, and consent (i.e., how to provide it, and what consenting meant). They were then able to provide informed consent (i.e., their understanding of the nature of the study, their consent to participate, and their consent to having their interview audio-recorded) via two options: (1) in writing by e-mail at their convenience, or (2) verbally at the beginning of their audio-recorded interview with a research team member (scheduled based on their preferred availability).

Participants completed a demographic survey and an audio-recorded UBC Zoom interview, after which they received a $50 online gift card to thank them for their time and input. These interviews were transcribed and analyzed by the research team using NVivo qualitative data analysis software. Participant interviews were undertaken by four researchers (author RS and further individuals named in Acknowledgements) of various disciplines (social work, nursing, kinesiology) who received identical training and utilized a pre-established interview guide to minimize individual differences in interview outcomes as a result of interviewer characteristics. Conscious efforts were made to seek elaboration and clarification from participants and not to accept potentially common assumptions at face value. No authors were known to any participants of this research prior to undertaking the study.

Data Collection

Two researchers (authors RS and DR) collected data on participant experiences surrounding COVID-19 and its influence on participant nicotine use and cessation needs. In each NVivo demographic file (n=80) from the primary study, keywords such as *"COVID-19", "pandemic", "COVID", "lockdown", "isolation",* "*home*", *"stay AND home", "public AND health AND order", "health AND order", "virtual", "remote", "online", "Zoom", "work AND home", "not AND working", "working AND less"* were searched.

As only a subset of participants discussed COVID-19-related topics and as the pre-coded NVivo files were organized in relation to the interview questions asked in the primary study, this approach on the basis of keyword searching was utilized to (1) rapidly identify the participants that discussed COVID, and (2) identify COVID-specific themes *within* the responses provided to the abovementioned interview questions (i.e., within barriers and facilitators to quitting). The specific keywords used were identified by the authors RS and DR in a collaborative brainstorming session as terms commonly used by the general population (as well as by participants as recalled from primary interviews) when discussing pandemic-related events in conversation, in current events and news, and on social media. As participant accounts emerged while searching, more keywords were identified as discovered.

Once all participants that discussed COVID-specific topics were identified via keyword searching, their full interview transcripts were reviewed as well to ensure any details from their unique experiences

were not missed. In total, 33 participants discussed the impact of COVID-19 on their cessation experiences. All these responses were collected and compiled in a Word document.

Data Analysis

Upon compilation of participant responses, two collaborative coding sessions were held and, via inductive content analysis [20], a codebook was created and applied to all relevant responses to identify common patterns among participant cessation experiences and needs during the pandemic. We then charted all themes and subthemes onto Excel software to allow for visualization and comparison of major findings. Finally, we disaggregated all identified themes and subthemes by gender, nicotine user type, and age, and Indigeneity, and did not find significant differences in theme endorsement between the stated groups; however, within subthemes, we made note of unique nuances in responses provided by Indigenous participants due to the unique factors affecting Indigenous peoples in Canada in relation to tobacco and nicotine use as a result of the ongoing and residual intergenerational impacts of colonization [21].

Patient and Public Involvement

Participants were not involved in any aspect of the study design, recruitment, or conduct of neither the primary nor the present study. Upon recruitment for the primary study, participants were asked if they would like to receive the research findings via email upon completion of the study; findings will be disseminated through a written summary to participants who opted in. Academic outputs will be disseminated through social media and community networks.

RESULTS

Sample

Participants included in this study (N=33) were primarily male (55%), and of various racial and ethnic backgrounds, with White (European) heritage being the most frequently cited (33%), followed by Indigenous (27%), defined as an Aboriginal person of Canada (First Nations, Métis, and Inuit). Most of the sample was between 16 and 29 years old (57%), with the remaining 43% aged 30 and older. Finally, most participants were dual users of both combustible cigarettes and e-cigarettes (40%), followed by only smokers (33%), and only vapers (27%). A complete breakdown of participant characteristics is provided below in Table 1.

Table 1. Participant characteristics

Demographic		**n (%*)**
Gender	Female	15 (45)
	Male	18 (55)
Race/Ethnicity	White	11 (33)
	Indigenous	9 (27)
	Asian	4 (12)
	South Asian	2 (6)
	Latin American	1 (3)

	Black	1 (3)
	Biracial/Multiracial	2 (6)
	Other/Not Listed	3 (9)
Age	16-18	6 (18)
	19-24	7 (21)
	25-29	6 (18)
	30+	14 (43)
Nicotine Use	Smokers (Cigarettes-Only)	11 (33)
	Vapers (Vapor Products-Only)	9 (27)
	Dual Users	13 (40)

**Expressed as a percentage of the total sample (N=33).*

Themes

From participant reports, we found several themes that fit within the following three thematic categories: (1) barriers to quitting nicotine use during the pandemic; (2) facilitators to quitting or reducing nicotine use during the pandemic; and (3) suggestions for improving cessation programming during the pandemic. The breakdown of these themes, as well as associated frequencies of endorsement ('n' being the number of participants endorsing the category/theme/subtheme) and percentages (as a proportion of the total sample for categories and themes, and of the respective category for subthemes), are outlined in Table 2.

Table 2. Themes and subthemes discussed by participants and associated frequencies (n) and percentages (%) of participants endorsing these

Categories ***(n, %*)***	**Themes** ***(n, %*)***	**Subthemes** ***(n, %**)***
Barriers to quitting/reducing nicotine use during the pandemic ***(21, 64%)***	**Isolation, uncertainty, and shifts in environment and lifestyle** (due to fewer activities, increased boredom, diminished socializing, altered home social environment, loss of existing coping strategies/activities, etc.) *(16, 48%)*	Smoking/vaping <u>more</u> to: • Curb boredom *(6, 29%)* • Cope with triggers *(3, 14%)* • Be able to go outside *(2, 10%)* • Get away from screens ("Zoom fatigue") *(2, 29%)* • Satisfy the need to use hands when engaging in repetitive activities (TV; homework) *(1, 5%)* Smoking/vaping <u>more</u> due to: • Not knowing if/where one could go outside the home *(2, 10%)* • Being away from workplaces that restricted use *(2, 10%)* • Being indoors with other users *(2, 10%)* • Not being able to spend time with non-users *(2, 10%)*

	Increased stress and worsened mental health (due to lack of support, reduced access to social and professional supports, etc.)	Smoking/vaping <u>more</u> to:
		• Cope with general stress and anxiety *(5, 24%)*
		• Cope with work-related stress and anxiety *(3, 14%)*
		  ○ Due to working from home (blurring of boundaries between work/home) *(2, 10%)*
		  ○ Due to working in-person (fear of getting sick; less time off; burnout) *(1, 5%)*

	(8, 24%)	Smoking/vaping <u>more</u> due to: • Lack of COVID-specific mental health supports *(3, 14%)* • Lack of incorporation of general and COVID-specific trauma (e.g., deaths of loved ones) and associated vulnerabilities of certain populations in supports *(1, 5%)*
Facilitators to quitting/reducing nicotine use during the pandemic ***(11, 33%)***	**Reduced access to nicotine products and opportunities for usage** (due to fewer/restricted social events, business closures, etc.) *(6, 18%)*	Smoking/vaping <u>less</u> due to: • Less opportunities to be around users *(3, 27%)* • Less social pressure *(3, 27%)* • Inability to purchase smoke/vape products (e.g., underage vapers) *(1, 9%)*
	Increased introspection and reflection on own behaviours (due to increased time alone) *(5, 15%)*	Smoking/vaping <u>less</u> to: • Improve own lung health *(2, 18%)* • Save money (to travel, see loved ones) *(2, 18%)* Smoking/vaping <u>less</u> due to: • Seeing others quit during the pandemic *(2, 18%)* • Fear of contracting COVID *(1, 27%)* • Identifying new cognitive strategies to cope with negative emotions *(1, 27%)*
Suggestions for improving cessation programming during the pandemic ***(19, 58%)***	**Enhance social support features** (virtual and in-person) *(11, 33%)*	Virtual supports: • Zoom meetings *(3, 16%)* • Discussion forums *(3, 16%)* • Group chats *(2, 11%)* In-person supports: • Small support groups *(2, 11%)* • Plans for in-person activities when restrictions ease *(2, 11%)*
	Increase awareness of quitting benefits during the pandemic *(7, 21%)*	Health benefits: • Discuss health implications of smoking/vaping and quitting *(4, 21%)* Financial benefits: • Discuss financial implications of smoking/vaping during pandemic layoffs *(3, 16%)* • Provide financial incentives (monetary rewards) *(1, 5%)*
	Provide pandemic-specific resources and advice for trying to quit during the pandemic *(5, 15%)*	Target visible locations for dissemination: • Social media *(4, 15%)* • In-person locations where people are able to go (grocery stores, health facilities) *(2, 11%)* Include culturally relevant practices for Indigenous nicotine users, e.g.: • Sweat lodges *(1, 5%)*

**Expressed as a percentage of the total sample (N=33).*

***Expressed as a percentage of the respective category (n indicated in first column).*

Barriers to quitting nicotine use during the pandemic

Numerous participants (64%) reported experiencing barriers to quitting nicotine use during the pandemic, particularly in relation to pandemic-specific isolation. Approximately half (48%) of all participants said the lifestyle limitations they experienced due to the pandemic were a barrier for them. Many participants described how isolation measures resulted in a reduction in activities individuals could attend, limitations on socializing, and subsequently, an increase in boredom:

> 'Last year for me personally, my partner and I planned on quitting and then COVID happened, and we didn't have anything to keep ourselves entertained so that's how we just fell back into the pit' (Participant 84, Indigenous female).

In this vein, individuals saw smoking and vaping as an activity to pass the time while being confined to their home environment, despite many not wanting to smoke or vape. In relation to boredom, one participant also described vaping to satiate the desire to do something with their hands while engaging in monotonous activities that became everyday activities during the pandemic, such as watching TV:

> 'Since COVID, [vaping] is just something to do especially if I'm like doing homework all day or watching something all day every day and want to do something with my hands' (Participant 94, Indigenous female).

In addition, participants highlighted pandemic-specific isolation as a barrier to being able to engage in the alternate activities and distractions they usually use to cope with nicotine-specific triggers and cravings. Participants also noted how isolation combined with uncertainty on what they were able to do outside the home in the context of provincial stay-home orders and recommendations created a unique situation which further magnified isolation as a barrier:

> 'Instead of smoking, we'd be going on a hike, or for a walk... That being said, I don't necessarily know the rules because of this pandemic and what's allowed' (Participant 32, male).

A couple of participants even reported that nicotine usage provided them with a reason to go outside during the pandemic when they were otherwise advised to remain indoors:

> 'While being stuck at home with the pandemic it was kind of nice to just have a break to get outside. I think for a while there, I wanted to smoke because I was spending all day, every day inside my house on Zoom, so smoke breaks were a way to get outside' (Participant 59, male).

Interestingly, a few more participants specifically described wanting to leave the house to engage in nicotine use after encountering unavoidable "Zoom-fatigue", or other computer-related fatigue due to elevated screen time as a result of the sudden transfer of school and work settings to virtual platforms:

> 'I think the hardest part is being busy all day long with Zoom fatigue or being on the computer all day during a pandemic. This is my primary source of employment and I'm finding that I just

want to walk away from the computer sometimes, so I end up [leaving the house to smoke]' (Participant 34, male).

Similarly, a few participants described being home instead of at work all day proved problematic for them, as their work settings provided protective factors for reducing use through regulations or other environmental factors:

'If I had to go to work and be at work all day, I wouldn't smoke all day at work because according to my work I can't smoke. It's terrible right now during this pandemic where I'm home and I can [smoke all day]' (Participant 62, male).

Furthermore, some participants reported that being confined to their home environment created an inconducive environment for cessation, due to a lack of in-person support from family members, like being trapped in an environment with smokers:

'I never smoked before COVID, but with COVID you're hanging out with the same people in the same bubble so you're doing what everyone is doing together. I think once COVID restrictions ease up it might make it easier [to not smoke] and then you can go outside of your bubble and hang out with people who don't, like all my other friends don't' (Participant 29, female).

Another prominent barrier to quitting was an elevated level of stress during the pandemic and associated with this, poor mental health. While some participants just spoke of general stress due to the pandemic, several participants identified employment and school as specific stressors during the pandemic – both as a result of having to work at home or long hours outside the home. According to nearly a quarter (24%) of participants, nicotine use helped them cope with this stress:

'I'm working from home because of COVID. When I feel under a lot of pressure, I reach towards cigarettes...' (Participant 76, Indigenous male).

'COVID just added so much stress. I work in a produce warehouse, so I never really got time off. I've worked through this whole pandemic, and I never got one day off, and it wears on you. Plus, what if I get sick, I don't wanna think of that, so I [smoke]' (Participant 73, Indigenous male).

In addition, a few participants spoke of a lack of pandemic-specific mental health supports in the context of provincial stay-at-home regulations and ongoing COVID-related stress and trauma, which exacerbated existing barriers, created further barriers for coping with mental health, and led them to smoke and vape instead:

'[The government] put [restrictions] down during COVID and put everyone under more stress with no mental health supports... I have a job, I have a nice house and I still can't get therapy… but I can [smoke]' (Participant 46, female).

> 'I've used the tools that [online provincial cessation supports] have to get away from smoking… But for some people or some populations, it really doesn't help sometimes. Like I work a very stressful job, and my life is very stressful, more than the average person. I've had four deaths in the last year. They talk about stress, but [don't] exactly target the added stress of calling family in and telling them people died. It just makes it hard' (Participant 76, Indigenous male).

Facilitators to quitting or reducing nicotine use during the pandemic

A third (33%) of participants reported encountering facilitators for quitting nicotine use during the pandemic. A major theme reported by 18% was that the pandemic reduced accessibility and opportunities to smoke/vape. A few individuals reported this was because they were unable to attend social gatherings (e.g., parties) that were often associated with peer pressure to smoke/vape:

> '... if you smoke or vape in a more social setting, that all goes out the window with the Coronavirus...' (Participant 13, male).

In addition, a few individuals discussed how reduced access to nicotine-related products due to store closures, lockdowns, and isolation measures made it easier for them to reduce their nicotine usage:

> 'My vape broke at the beginning of the pandemic when all the stores were closed and nobody was going anywhere. I wasn't able to fix it, and I couldn't exactly ask my parents to go buy me a new vape, so I ended up pretty much quitting around then which was not fun but in hindsight was a stroke of luck' (Participant 31, male).

> 'I do have one friend that quit, and he was somebody that said I'll never quit, it's not a problem, I'll do it my whole life . . . When COVID happened, and he couldn't go to any stores, he realized how horrible he felt because of it. And just from that one second and being like, okay, my lungs hurt less, it drove him to quit, which was motivating for me' (Participant 20, female).

As such, another facilitator commonly reported (15%) by participants was that the pandemic prompted individuals to become more introspective on their smoking/vaping behaviours, as well as on their behaviours that indirectly contributed to smoking/vaping, e.g.:

> 'Sometimes when I'm irrational and mad that will make me smoke and I learned to rationalize a lot more during this pandemic with all the time alone and away' (Participant 47, male).

Indeed, people approached introspection with a variety of motivations. For example, as quoted above, a few participants said witnessing someone in their social circle quit during the pandemic increased their own motivation for quitting. Similarly, some stated that they wanted to quit to improve their lung health given the elevated negative respiratory impacts of COVID-19 on smokers, and others said they wanted to save money for post-pandemic activities, such as traveling and seeing their families:

> 'I want to travel again. But now you can't travel. I'm saving up for travelling right now and not for vaping… if I save enough money, I might actually be able to see my family… I can actually go home after this silly pandemic is over' (Participant 73, Indigenous male).

Suggestions for improving cessation programming during the pandemic

Over half of participants (55%) made comments in reference to improvements they would have liked to see with online nicotine cessation supports during COVID-19. Participants had a variety of suggestions, such as identifying unique coping strategies for people who are more isolated due to COVID. The most common recommendation (33%) was to enhance social support features. The loss of social connection during the pandemic emphasized the need to ensure that social support was available to nicotine users in this context. In addition to in-person support groups, individuals advised that programming incorporate virtual support in the form of meetings via Zoom or online discussion forums to connect with others:

> 'I think organizing Zoom meetings or small group chats where you can say what you've accomplished and how you're struggling right now and then maybe create a few friends who are all trying to quit together' (Participant 37, male).

> 'Forums are a really positive thing as well, because it allows people to talk to each other, especially now with COVID. We're all isolated and quitting smoking, and when you're isolated it can be even harder, because we're all under stress. So, I think being able to have a connection like that through a community where people can talk to each other and feel support, even if it's online, is good' (Participant 46, female).

Many participants (21%) also suggested that programming increase awareness of the benefits of quitting specifically in relation to COVID-19. Individuals believed that since COVID-19 is a respiratory disease, widely disseminating information on the risks and health impacts of COVID-19 in relation to smoking/vaping would resonate with users:

> 'Smoking and COVID should be more prevalent. I think I think the COVID piece is a valuable thing to the developers to think about because it's such a hot word, and there's a lot of talk about respiratory illnesses' (Participant 48, female).

Participants also mentioned that, as people were more attentive to money-related matters during the times of unemployment from COVID-19 layoffs, discussing financial implications of smoking/vaping and providing monetary incentives and rewards to quitting might provide an additional motivation to quit during the pandemic:

> 'I guarantee if people are scrolling through this, and they see the average smoker spends $3,000 a year on cigarettes, especially during COVID when people are losing their jobs, that would be a pretty big selling point' (Participant 64, Indigenous male).

> 'I love Vancouver [BC], it's the best place in the world, but it's also ridiculously expensive. Right now, for a lot of people, money is a big issue because with COVID people are out of work. That is an incentive so giving something monetary would be a reward' (Participant 39, male).

Finally, several participants (15%) also highlighted a need for increased awareness of pandemic-tailored resources and advice for those trying to quit during the pandemic. Suggestions included advertising through social media and at locations that coincided with the lifestyle of the public during the pandemic (e.g., grocery stores and health centres). Additionally, as the pandemic resulted in boredom and a loss of previously established coping strategies, participants suggested activities to replace smoking/vaping and help people fill their free time and cope, including tailored and culturally relevant practices for Indigenous nicotine users:

> 'I think maybe having a different strategy for people that are more isolated throughout COVID versus once restrictions start easing out so maybe they could recommend some other strategies and distractions, let's say as an example, going for a walk' (Participant 29, female).

> 'I know some people who were chronic major smokers do like the sweat lodge, which helps clean you out and stuff, so having resources for First Nations people, say in Kamloops [BC], letting people know they they're going to do a smoking cleanse would be helpful. But I know with COVID its extremely difficult' (Participant 69, Indigenous female).

DISCUSSION

The present study highlights the impacts of the COVID-19 pandemic on individual nicotine cessation journeys. In addition, it establishes the importance of cessation support remaining up-to-date and considering the new and ever-changing psychosocial and socio-environmental factors that come with a global crisis. Finally, it speaks to the significance of centering participant voices and learning firsthand from nicotine users about their unique needs as it relates to barriers and facilitators to successfully quitting nicotine use.

The pandemic revealed unique vulnerabilities of nicotine users that were not previously emphasized, such as the effects of boredom, stress, and isolation. Isolation was a noteworthy barrier to quitting tobacco use according to this study. It is important to situate the concept of isolation within the macro-level socioenvironmental determinants that led to isolation for this sample. At the time of data collection, the Province of British Columbia had authorized a number of COVID-specific protective measures such as restricting capacities at gatherings, businesses, and private events, including partial or complete closures; suspending interprovincial travel (in addition to federal international travel bans); introducing vaccines in age- and vulnerability-based phases (e.g., elderly and Indigenous populations first); and enacting specific restrictions for the partial- and non-vaccinated [22]. Measures were variable to sudden changes in accordance with the evolving nature of the pandemic [22]. As such, many participants talked about how isolation as a result of the above led to immense boredom. Boredom has been found to play a key role in increased alcohol and cannabis consumption during the pandemic [23], and our findings reveal that this similarly applies to use of tobacco products. The inability to engage in

routine activities (e.g., outdoor activities, regular exercise routines), as well as novel activities (e.g., travel), that often served to distract them from using nicotine resulted in many participants turning to nicotine to help them pass the time. This finding is in line with other research identifying how nicotine use tends to increase when routines are disrupted, and boredom is resultantly increased [24-25].

In addition, the pandemic context is unique due to the addition of uncertainty to isolation. Some participants discussed not even knowing where they could go if they were to leave their house due to the nature of restrictions. Combining this with the global atmosphere of not knowing if and when the pandemic will end, this finding speaks to how nicotine users may have felt a loss of control over their lives, and as such over their abilities to maintain quit status, begin their quit journeys, and/or prevent relapse. As such, the ongoing impact of isolation as well as associated feelings of diminished control over outcomes cannot be underestimated, and our study findings foreground its role on tobacco use behaviors, which is largely negative.

It is also interesting that individuals spoke about continuing to smoke in order to go outside, versus going outside in order to smoke, as well as mentioned several unique motivators for doing so, such as encountering "Zoom-fatigue" as a result of educational and employment settings being shifted to remote formats. The pandemic appeared to create a shift in focus (being outside or getting away from screens rather than satisfying a craving) in relation to smoking. Having to go outside for a smoke has been previously perceived as a "hassle", particularly after public smoke-free bans came into place [26]. However, going outside for a smoke during the pandemic appears to have shifted this perspective among some smokers, wherein smoking was perceived as something that enabled a needed respite from the monotony of being indoors. Public health measures would benefit from considering the nature of tobacco use when implementing stay at home orders, and particularly consider how removing the ability to leave one's home – especially in the context of the pandemic-resultant rise in remote and hybrid work – can perpetuate health risk behaviors, like smoking. Given that distractions have been identified as a key affordance to quitting [27], ensuring that healthy distractions, for example games and opportunities for inter-user communication embedded within web- and app-based quit supports, are accessible and available during and after the pandemic is essential.

Some individuals found pandemic isolation to make it easier to quit because there were fewer opportunities to experience social ("peer") pressures around nicotine use; there were fewer parties and gatherings, and fewer opportunities to socialize with others who smoke/vape. On the other hand, living with other nicotine users and not being able to leave a shared environment due to lockdown measures proved a major barrier to quitting. Our findings corroborate existing studies that highlight how the opinions and behaviors of peers play a significant role in nicotine use maintenance [28]. However, as isolation and not seeing peers proved to be both a risk factor and a protective factor for increasing nicotine use, it is fundamental to note that that these findings are pertaining to exposure to social influences and contexts, and not social support. Social support is an integral element of cessation [29], and reduced connection with others due to the pandemic further highlights this. In this regard, and according to the findings, the pandemic increased the perception that enhancing social support in existing cessation supports should be prioritized, such as through forums, virtual and in-person support groups, coaching, and buddy systems, among others.

Although participants spoke about general pandemic-related stress and anxiety and their impact on increased use, many participants also discussed stress specifically associated with working from

home, being laid off, or working in-person during the pandemic. Indeed, the pandemic introduced a myriad of sources of job-related stress, including layoffs, reduced income, reduced job security, and, for remote workers, a diminished ability to 'leave work at work' [30]. For in-person and essential workers, the pandemic led to lengthy work schedules, minimal time off, diminished time to engage in coping and stress-relieving strategies that hadn't yet been impacted by the pandemic, increased burnout, and increased susceptibility to the COVID-19 virus [31]. Previous literature has found that increased stress and anxiety about employment and finances is associated with greater nicotine consumption [32]. Therefore, it makes sense why nicotine users smoked/vaped more to cope with pandemic-specific financial and employment stress and reveals how nicotine users are particularly vulnerable from a health risk perspective in the context of job loss, job instability, and burnout. Some nicotine users decided to quit or reduce use to save money in order to access protective factors such as travel (distractions), and visiting family (social support), emphasizing that the financial benefits of quitting may then be particularly relevant within a pandemic and post-pandemic context.

Finally, participants spoke of the traumatic stress of coping with pandemic-related deaths, and the lack of supports addressing COVID-specific traumas, which brings to light the need to incorporate both general and pandemic-related trauma into cessation supports that target mental health. It is well-established in the literature that most substance use, including nicotine use, tends to emerge as well as heighten when individuals experience trauma and feel unable to cope with it [33]. This further taps into the concept of nicotine users experiencing loss of control over life outcomes and subsequently succumbing to triggers and relapses. With almost 763 million deaths worldwide as a result of COVID-19, pandemic-related trauma continues to remain heavily significant and must be addressed by cessation supports through appropriate mental health resources, such as trauma-informed training for quit coaches, recommendations for virtual, 24/7 suicide-prevention services, and meaningful social supports [34].

Specific populations, such as Indigenous peoples, are overrepresented in facing heightened adversities, including those from COVID-19 [35]. Indeed, Indigenous participants described needing to work in-person during the pandemic, wanting to but being unable to see their families, and experiencing a greater amount of COVID-related trauma than others they knew. As such, cessation supports must provide unique, culturally responsive considerations for Indigenous nicotine users, for example by incorporating support and wisdom from Elders and bands, allowing for family and community engagement, engaging in traditional and ceremonial activities such as sweat lodges, providing support in the form of Indigenous quit coaches, and, finally, engaging Indigenous voices and individuals in developing these interventions [21].

In sum, the findings of this study indicate the need for interventions to incorporate elements addressing the unique susceptibilities experienced by users, such as the effects of isolation and stress, as these are states likely to persist beyond a pandemic context. Examples of these may include tools and strategies such as gamification to incorporate distractions, or tailored financial incentives. In addition, the findings emphasize the need to offer online and hybrid cessation services as well as novel modalities for information dissemination (e.g., Instagram and TikTok ads, Zoom groups, app-based cessation programs) as the literature has demonstrated that the pandemic caused significant drops in traditional, in-person cessation program enrolments [36-37]. By implementing participant suggestions, many barriers stated by individuals could potentially be eliminated or minimized. Finally, when developing

new programs for cessation, we must also ensure that people who face greater systemic barriers, such as Indigenous and rural populations, can access these supports [38].

Strengths and Limitations

This research has several limitations. First, interviews are subject to recall and social desirability biases. Second, as participants were solely from BC, Canada, participants' experiences may not be representative of experiences in a broader group of nicotine users. In addition, it must be noted that BC implemented pandemic response measures differentially from other provinces and countries, which may limit the transferability of the findings to individuals in areas where the response measures were different from that of BC. Third, since we did not directly ask questions about the COVID-19 pandemic, not all participants from the primary project provided their opinions. It is possible more participants would have provided in-depth information if intentional questions surrounding the pandemic had been incorporated into the original interviews. Fourth, due to our selection of keywords, it is possible some statements about COVID-19 and the pandemic could have been missed. Fifth, given that data were collected during a specific time period (May to August 2021), sociocultural and policy changes evolving with the pandemic may have continued to influence cessation needs beyond the scope of these findings. Finally, our sample may be unique in that participants may belong to a higher socioeconomic status than the general population of nicotine users worldwide as indicated by access to a desktop or mobile device and an Internet connection. Despite these limitations, this study has some noteworthy strengths. First, drawing secondary data from a very large primary study allowed for maximum variation across a range of sample characteristics, providing a rich dataset from which to develop themes. Next, our use of inductive qualitative methods enabled a detailed analytical approach. Finally, collecting rich interview data over months allowed us to capture nuanced, as well as consistent themes in the context of an ever-changing pandemic landscape in real time.

CONCLUSIONS

This qualitative study provided a snapshot into the lived experiences, needs, and desires of nicotine users motivated to quit during the COVID-19 pandemic. While isolation from the pandemic lent to some facilitators to quitting (e.g., reduced exposure to social pressures), participants reported a broader number of barriers to quitting associated with isolation. In addition, stress, especially financial stress, associated with the pandemic played a critical role in disrupting cessation efforts. Cessation programming would benefit from considering these unique impacts of the pandemic on cessation.

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COMPETING INTERESTS STATEMENT

The authors have no conflicts of interest to declare.

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AUTHOR CONTRIBUTIONS

RS oversaw participant recruitment, data collection, interview transcription, primary data analysis, and conceptualization of the manuscript. LS, as senior author, conceptualized and designed the greater project and research protocol, and obtained research funding. DR led conduction of secondary data analysis. RS and DR jointly developed the manuscript, with LS overseeing and providing feedback on draft versions. All authors have seen and approved the final version.

PATIENT CONSENT

As the present study involved secondary analysis of primary data, participant consent was not required as they had previously consented to the primary study.

ETHICAL APPROVAL

Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145).

DATA SHARING STATEMENT

We have uploaded the semi-structured interview guide as a Supplementary File. To protect participant identities, we do not intend to share participant interview transcripts in a repository. All requests for data sharing may be directed to the authors.

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QUITNOW RESEARCH STUDY PROTOCOL

INTERVIEW GUIDE FOR NON-INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

NOTE:

- Try your best to interview the participant as close to 1 hour as you can
  - Take your time – if you are not rushed, then participants will feel less rushed to answer your questions
  - Pause for a few seconds after participants answer – this will prompt participants to add more to their answer. Saying something like "*mhm…*" after they answer as if you are expecting them to say more.
  - Encourage participants to take their time with their responses.
- Encourage creative thinking
  - Do not limit participants with what they believe is possible. People do their best creative thinking when they do not think about practical constraints.
- Try to ask as many open-ended (vs. Closed-ended) questions as possible
  - Example of a closed-ended question: *Do you like that?*
  - Example of an open-ended question: *What do you like about that?*
- Phrases you can use to prompt participants to talk more:
  - *Tell me more about ____.*
  - *How can you see ____ being incorporated into the website?*
  - *How can you see ___ (flaw of the website)___ being fixed?*
  - *What else?*
- Responses to difficult answers:
  - Participant: there's nothing I don't like about it! It's great!
    - Answer: *"What's so great about it?"*
    - Answer: *"What can make it better?"*
    - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*
    - Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

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Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it
    - *If they haven't had a chance to do it, screen share the questionnaire and complete it with them.
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Consent – ongoing process (can discontinue at any point)
6. Questions?
7. Interview is being recorded – is that okay? *start recording*
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How did (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
6. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
7. How would you like to receive support on QuitNow?
8. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
9. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
10. What do you think of incorporating support for quitting e-cigarettes on QuitNow?

   a. How should it be different to cigarette cessation support?
   b. How should it be similar?
11. What additional features would you like to see on QuitNow?
12. Do you have any suggestions for improving the look and feel of QuitNow?
13. Would you recommend QuitNow to your friends/family? Why or why not?
14. How could we get the word out that QuitNow exists?
15. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
16. Outside of QuitNow, what are other aspects of your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
17. For current QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
18. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
19. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?
20. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
21. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

- Which vendor would you like to receive your $50 honorarium for?
- Would you live to be contacted to participate in a follow-up study?
- Would you like to receive the results of the study once they are published?

After the Interview

1. Update spreadsheet (OneDrive):
   a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up contact, would like to receive the results of the study)
   b. Record if they would like to participate in a follow up focus group
   c. Record if they would like to receive results of the study
2. Upload to OneDrive
   a. Recording
   b. Questionnaire
3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
   a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
   b. E.g., "#23, F, N" for participant number 23, female, QuitNow non-user

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INTERVIEW GUIDE FOR NON-INDIGENOUS POTENTIAL QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

NOTE:

- Try your best to interview the participant as close to 1 hour as you can
  - Take your time – if you are not rushed, then participants will feel less rushed to answer your questions
  - Pause for a few seconds after participants answer – this will prompt participants to add more to their answer. Saying something like "*mhm…*" after they answer as if you are expecting them to say more.
  - Encourage participants to take their time with their responses.
- Encourage creative thinking
  - Do not limit participants with what they believe is possible. People do their best creative thinking when they do not think about practical constraints.
- Try to ask as many open-ended (vs. Closed-ended) questions as possible
  - Example of a closed-ended question: *Do you like that?*
  - Example of an open-ended question: *What do you like about that?*
- Phrases you can use to prompt participants to talk more:
  - *Tell me more about ____.*
  - *How can you see ____ being incorporated into the website?*
  - *How can you see ___(flaw of the website)___ being fixed?*
  - *What else?*
- Responses to difficult answers:
  - Participant: there's nothing I don't like about it! It's great!
    - Answer: *"What's so great about it?"*
    - Answer: *"What can make it better?"*
    - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*

Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it

- *If they haven't had a chance to do it, screen share the questionnaire and complete it with them.

4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Consent – ongoing process (can discontinue at any point)
6. Questions?
7. Interview is being recorded – is that okay? *start recording*
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

1. Let's start with the overall look and feel.
    a. What is your initial reaction?
    b. How could it be improved?
2. What aspects of the website did you like?
    a. What would you find helpful in quitting smoking?
    b. What would keep you coming back?
3. What did you not like?
    a. What are the major limitations of the site?
    b. What makes you not want to come back to it?
4. How would you like to receive support on QuitNow?
5. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
6. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
7. What do you think of incorporating support for quitting e-cigarettes on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
8. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
9. What additional features would you like to see on QuitNow?
10. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
11. Would you recommend QuitNow to your friends/family? Why or why not?
12. What might be some barriers (e.g., stress, friends/family who smoke) to quitting? How could/should these be mitigated by QuitNow?

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13. Would you be more likely to use QuitNow on your mobile device or laptop?
14. If you could have anything you wanted, what would you want QuitNow have/do for you?
15. How could we get the word out that QuitNow exists?
16. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
17. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

- Which vendor would you like to receive your $50 honorarium for?
- Would you like to be contacted to participate in a follow-up study?
- Would you like to receive the results of the study once they are published?

After the Interview

1. Update spreadsheet (OneDrive):
    a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up, would like results of the study)
    b. Record if they would like to participate in a follow up focus group
    c. Record if they would like to receive results of the study
2. Upload to OneDrive
    a. Recording
    b. Questionnaire
3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
    a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
    b. E.g., "#23, F, N" for participant number 23, female, QuitNow non-user

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INTERVIEW GUIDE FOR INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it; if they haven't had a chance to do it, go through it on share screen
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
6. Interview is being recorded – is that okay?
7. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.

QuitNow Questions (~50 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. We understand that you identify as Indigenous. Which nation do you belong to?
6. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
7. What other aspects of your nation's culture or of Indigenous culture in general might be honored in QuitNow?
8. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
    e. What aspects of QuitNow resonate with your nation's culture or Indigenous culture in general as you understand it?

9. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
    d. What aspects of QuitNow do not resonate with your nation's culture or Indigenous culture in general as you understand it? How could this be addressed?
10. How would you like to receive social support on QuitNow?
11. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
12. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
13. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
14. What additional features would you like to see on QuitNow?
15. Do you have any suggestions for improving the look and feel of QuitNow?
16. Would you recommend QuitNow to your friends/family? Why or why not?
17. How could we get the word out that QuitNow exists?
18. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
19. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
20. For QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
21. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
22. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

way' limləmt,| thank you

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INTERVIEW GUIDE FOR INDIGENOUS POTENTIAL QUITNOW USERS

Preparation (using Zoom for interviews)

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4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

Welcome/Instructions for Facilitators (5 minutes)

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2. Introduce yourself
3. Questionnaire – thank them for completing it; if they haven't had a chance to do it, go through it on share screen
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
6. Confirm that they have looked through the QuitNow website
7. Interview is being recorded – is that okay?
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.

QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

1. Let's start with the overall look and feel.
    a. What is your initial reaction?
    b. How could it be improved?
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6. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?

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7. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
8. You mentioned that you identify as Indigenous. Which nation do you belong to?
9. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
10. What other aspects of your nation's culture or of Indigenous culture in general might be honored in QuitNow?
11. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
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way' limləmt,| thank you

Reporting checklist for qualitative study.

Based on the SRQR guidelines.

EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

AUTHORS
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-Danielle Rodberg, BSN Student - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada
-Laura L. Struik, PhD, Assistant Professor - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada

		Reporting Item	Page Number
Title			
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1-4
Abstract			
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	2
Introduction			
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	3-4

Purpose or research question	#4	Purpose of the study and specific objectives or questions	4
Methods			
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	4
Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	4-5
Context	#7	Setting / site and salient contextual factors; rationale	3-5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	4
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative	4-5

		process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	4-5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5-6
Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	4-5
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	4-5
Results/findings			
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	5-8
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6-8
Discussion			
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application /	8-10

		generalizability; identification of unique contributions(s) to scholarship in a discipline or field	
Limitations	#19	Trustworthiness and limitations of findings	10
Other			
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	11
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	11

BMJ Open

Experiences of Nicotine Users Motivated to Quit During the COVID-19 Pandemic: A Secondary Qualitative Analysis

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Primary Subject Heading:	Smoking and tobacco
Secondary Subject Heading:	Qualitative research, Public health, Oncology, Addiction
Keywords:	COVID-19, ONCOLOGY, PUBLIC HEALTH, SOCIAL MEDICINE

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EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

AUTHORS

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    - Postal address: Faculty of Health and Social Development, 1147 Research Road, University of British Columbia Okanagan, Kelowna, BC Canada, V1V 1V7
    - Email: ramona.sharma@ubc.ca
- Danielle Rodberg, BSN Student - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada
- Laura L. Struik, PhD, Assistant Professor - School of Nursing, The University of British Columbia (Okanagan Campus), Kelowna, Canada

WORD COUNT

6145 words

KEYWORDS

Nicotine, Smoking, Electronic Nicotine Delivery Systems, COVID-19

ABSTRACT

Objectives: The COVID-19 pandemic has brought to light a variety of key factors that affect tobacco use, including behavioral patterns, social support and connection, and physical and mental health. What we do not know is how those motivated to quit were impacted by the pandemic. As such, understanding the unique experiences and needs of people motivated to quit smoking or vaping during the COVID-19 pandemic is critical. The aim of this study was to examine the cessation experiences of nicotine users during the COVID-19 pandemic. **Design**: We conducted a supplementary secondary analysis of primary qualitative data, i.e., semi-structured interviews with individuals engaged in cigarette use (smoking), e-cigarette use (vaping), and dual use. **Setting**: British Columbia, Canada. **Participants**: Relevant data were drawn from 33 participants out of the primary study's 80-participant sample pool. **Measures**: Interview questions explored barriers and facilitators to quitting nicotine use. We then used conventional content analysis to identify relevant and additional emergent themes and subthemes surrounding pandemic-specific barriers and facilitators to quitting, and unique needs for cessation support in the context of the COVID-19 pandemic. **Results**: Pandemic-specific barriers included lifestyle limitations and poor mental health due to isolation. Facilitators to quitting during the pandemic included reduced access and opportunities to use nicotine products, as well as time for personal reflection on nicotine use behaviors. Suggestions for cessation programming included a primary focus on enhancing social support features (e.g., discussion forums, support groups), followed by increasing awareness of the benefits of quitting, and enhancing visibility of resources available to support quitting. **Conclusions:** The findings provide directions for how cessation supports can be tailored to better meet the needs of users motivated to quit during and beyond the COVID-19 pandemic.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Our qualitative approach provides detailed data on the unique needs of nicotine users hoping to quit in both pandemic and post-pandemic contexts.
- We recruited a diverse array of participants, including smokers, vapers, and dual users.
- The larger study that the present data is derived from was not designed to investigate pandemic-specific factors influencing quitting, which may impact generalizability.

INTRODUCTION

Globally, nicotine addiction continues to remain one of the most significant public health threats [1]. However, many nicotine users of all ages report a desire to quit [2]. Environmental and psychosocial factors play a key role in shaping cessation and reduction trajectories, including the availability of appropriate and accessible supports, diversity and accessibility of available nicotine products, federal and regional policies, historical contexts such as ongoing economic, public health, and socio-political events, and individual characteristics such as mental health, income, education, and social support [3]. One example of a significant and multifaceted environmental factor that has influenced tobacco use behaviors is the recent COVID-19 pandemic.

Tobacco use patterns and cessation trajectories appear to have shifted in various directions because of the pandemic with some users reporting an increase in usage and others reporting a decrease in usage. The variability of these reports aligns with changes seen in Canadian vaping rates. According to the Canadian Tobacco and Nicotine Survey (CTNS), youth between the ages of 15 to 19 demonstrated a decrease in vaping with 15% of youth vaping in the past 30 days in 2019 compared to 13% in 2021 [4-5]. However, other age ranges showed an increase in vaping with an increase from 15% to 17% among adults ages 20 to 24 and an increase of 3% to 4% among adults aged 25 and older [4-5]. This increase in use is disproportionate among certain groups, and researchers have brought forward how the pandemic has interacted with and subsequently enhanced pre-pandemic tobacco-related health risks among disadvantaged groups [6].

Mental health appears to play a major role in increased use of tobacco products during the pandemic. In Canada, individuals who reported having fair or poor mental health in 2020 were more likely to have increased their use of nicotine products [7]. Among Canadians who vaped in the past 30 days in 2021, 18% reported that their main reason for vaping was to reduce stress and anxiety [8]. Stress reduction was more commonly reported as the main reason for vaping by youth aged 15 to 19 in 2020 (33%) compared to 2019 (21%) [8]. Similarly, many cigarette users have discussed experiencing a sense of relief from smoking with individuals smoking more to cope with the stress of the pandemic and experience a sense of calm [9].

In contrast, for some nicotine users, the pandemic was accompanied by a decrease in nicotine use and an increase in motivation to quit. From an international lens, global trends show smoking rates have been trending downwards since the onset of the pandemic. In the United States, use of a tobacco product within the past 30 days decreased significantly from 2019 to 2021 among both high school and middle school students from 31% to 13% and 12% to 4%, respectively [10-11]. As well, e-cigarette usage rates among middle to high school students showed momentous decline from 27% to 11% [10-11]. Data from the Netherlands shows smoking cessation motivations were associated with concern regarding heightened risk for developing severe illness and needing to quit to reduce complaints from others in the household during isolation [12]. However, national data from the Netherlands shows minimal declines in smoking across the timeline of the pandemic with adult smoking rates declining from 22% in 2019 to 21% in 2021 [13-14]. Other countries showed more significant reductions, with smoking experiencing a possible decline in New Zealand from 14% (2019) to 11% (2021), a more significant change than those reported in years prior, and Scotland even more so from 17% (2019) to 11% (2021), [15-17]. Similarly, in the same time period, e-cigarette usage in Scotland appeared to decline, with rates

shrinking from 7% to 5%, after remaining at 7% since 2015 [16-17]; by contrast, e-cigarette use in New Zealand increased from 4% to 6% throughout the pandemic [15].

In sum, worldwide, the rates of pandemic nicotine use demonstrate significant variability. Furthermore, statistics on nicotine use before and after the onset of the pandemic (e.g., from 2019 compared to 2020 or 2021) may be subject to methodological differences and associated reporting biases due to changes in data collection strategies as a result of pandemic-specific restrictions; in fact, this was explicitly highlighted by a number of the abovementioned statistics [10, 13, 15-17]. This in combination to the overall variation in rates of use lends to added challenges in interpreting, summarizing, and comparing the nicotine use behaviors of users before, during, and after the pandemic, and warrants an in-depth exploration of their experiences.

Finally, the COVID-19 pandemic has facilitated the emergence of alternative health care modalities; more people are turning to website, SMS, and/or telephone-based healthcare modalities, including resources for cessation support [12]. Simultaneously, the COVID-19 pandemic led to a reduction in existing cessation supports due to closures and staffing, infrastructure, and resource shortages [18]. These rapid changes to available cessation resources and programming likely affected the trajectory of those trying to quit. Understanding how cessation was impacted and how individuals' cessation needs shifted is critical to informing the development of more responsive and adaptive cessation resources that consider the unique influence of the pandemic [19]. As a result, the aim of this study is to explore the cessation experiences of nicotine users motivated to quit during the COVID-19 pandemic.

METHODS

Design

We conducted a supplementary secondary analysis of primary qualitative data using in order to examine participant perspectives and experiences uniquely related to quitting during the COVID-19 pandemic [20]. Our method was data-driven in the sense that COVID-19 was not a topic specifically addressed by our interview guides, but was rather raised by the informants as discovered after primary data analysis. In other words, upon completion of primary data analysis, we noticed a theme of several participants describing novel and unexpected nicotine-related experiences that happened solely due to the pandemic. To explore this in depth and provide voice to the sub-set of participants who discussed COVID-specific experiences, we conducted a post-hoc retrospective interpretation of previously coded data through keyword searching and conventional content analysis, an inductive methodology that allows for development and quantification of codes, categories, and themes reported in data [20]. In addition to identifying general themes as discussed by participants, we sought to understand COVID-19-specific barriers and facilitators to quitting nicotine, which builds on the following questions asked in the primary research study: (1) "What might be some barriers to quitting?"; (2) "What are other aspects of your life that help facilitate reducing/quitting?"

Ethical approval was received from the Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145). The design and analyses within this study were not pre-registered on a publicly available platform; as such, the results should be considered exploratory. The Standards for Reporting Qualitative Research (SRQR) reporting guidelines were used for quality

appraisal [16]. Reflexivity was maintained by the research team throughout data analysis and manuscript writing by recording, discussing, and challenging established assumptions at all data collection and analysis stages.

Primary Study

In the primary study, we conducted semi-structured interviews with 80 participants across British Columbia (BC), Canada between May to August 2021; these lasted between 30-60 minutes in duration. The purpose of this study was to understand the cessation needs of BC residents to inform improvements for online cessation programming (see online supplementary file 1 for the interview guide, which includes details of other question topics, such as motivations behind participants' nicotine use and cessation patterns and needs with respect to a free, provincially funded online cessation support, QuitNow).

Eligible participants were recruited through targeted Facebook and Instagram ads via a third party (PH1 Research). Participants met the following eligibility criteria: motivated to quit vaping or smoking, ages 16 and over, able to communicate in English, and able to provide informed consent. To provide informed consent, individuals who demonstrated interest were emailed an information sheet describing study purposes and procedures, potential benefits/risks of participating, confidentiality, remuneration and funding sources, researcher contact information, and consent (i.e., how to provide it, and what consenting meant). They were then able to provide informed consent (i.e., their understanding of the nature of the study, their consent to participate, and their consent to having their interview audio-recorded) via two options: (1) in writing by e-mail at their convenience, or (2) verbally at the beginning of their audio-recorded interview with a research team member (scheduled based on their preferred availability).

Participants completed a demographic survey and an audio-recorded UBC Zoom interview, after which they received a $50 online gift card to thank them for their time and input. These interviews were transcribed and analyzed by the research team using NVivo qualitative data analysis software. Participant interviews were undertaken by four researchers (author RS and further individuals named in Acknowledgements) of various disciplines (social work, nursing, kinesiology) who received identical training and utilized a pre-established interview guide to minimize individual differences in interview outcomes as a result of interviewer characteristics. Conscious efforts were made to seek elaboration and clarification from participants and not to accept potentially common assumptions at face value. No authors were known to any participants of this research prior to undertaking the study.

Data Collection

Two researchers (authors RS and DR) collected data on participant experiences surrounding COVID-19 and its influence on participant nicotine use and cessation needs. In each NVivo demographic file (n=80) from the primary study, keywords such as *"COVID-19", "pandemic", "COVID", "lockdown", "isolation",* "*home*", *"stay AND home", "public AND health AND order", "health AND order", "virtual", "remote", "online", "Zoom", "work AND home", "not AND working", "working AND less"* were searched.

As only a subset of participants discussed COVID-19-related topics and as the pre-coded NVivo files were organized in relation to the interview questions asked in the primary study, this approach on the basis of keyword searching was utilized to (1) rapidly identify the participants that discussed COVID,

and (2) identify COVID-specific themes *within* the responses provided to the abovementioned interview questions (i.e., within barriers and facilitators to quitting). The specific keywords used were identified by the authors RS and DR in a collaborative brainstorming session as terms commonly used by the general population (as well as by participants as recalled from primary interviews) when discussing pandemic-related events in conversation, in current events and news, and on social media. As participant accounts emerged while searching, more keywords were identified as discovered.

Once all participants that discussed COVID-specific topics were identified via keyword searching, their full interview transcripts were reviewed as well to ensure any details from their unique experiences were not missed. In total, 33 participants discussed the impact of COVID-19 on their cessation experiences. All these responses were collected and compiled in a Word document.

Data Analysis

Upon compilation of participant responses, two collaborative coding sessions were held and, via inductive content analysis [20], a codebook was created and applied to all relevant responses to identify common patterns among participant cessation experiences and needs during the pandemic. We then charted all themes and subthemes onto Excel software to allow for visualization and comparison of major findings. Finally, we disaggregated all identified themes and subthemes by gender, nicotine user type, and age, and Indigeneity, and did not find significant differences in theme endorsement between the stated groups; however, within subthemes, we made note of unique nuances in responses provided by Indigenous participants due to the unique factors affecting Indigenous peoples in Canada in relation to tobacco and nicotine use as a result of the ongoing and residual intergenerational impacts of colonization [21].

Patient and Public Involvement

Participants were not involved in any aspect of the study design, recruitment, or conduct of neither the primary nor the present study. Upon recruitment for the primary study, participants were asked if they would like to receive the research findings via email upon completion of the study; findings will be disseminated through a written summary to participants who opted in. Academic outputs will be disseminated through social media and community networks.

RESULTS

Sample

Participants included in this study (N=33) were primarily male (55%), and of various racial and ethnic backgrounds, with White (European) heritage being the most frequently cited (33%), followed by Indigenous (27%), defined as an Aboriginal person of Canada (First Nations, Métis, and Inuit). Most of the sample was between 16 and 29 years old (57%), with the remaining 43% aged 30 and older. Finally, most participants were dual users of both combustible cigarettes and e-cigarettes (40%), followed by only smokers (33%), and only vapers (27%). A complete breakdown of participant characteristics is provided below in Table 1.

Table 1. Participant characteristics

Demographic		n (%*)
Gender	Female	15 (45)
	Male	18 (55)
Race/Ethnicity	White	11 (33)
	Indigenous	9 (27)
	Asian	4 (12)
	South Asian	2 (6)
	Latin American	1 (3)
	Black	1 (3)
	Biracial/Multiracial	2 (6)
	Other/Not Listed	3 (9)
Age	16-18	6 (18)
	19-24	7 (21)
	25-29	6 (18)
	30+	14 (43)
Nicotine Use	Smokers (Cigarettes-Only)	11 (33)
	Vapers (Vapor Products-Only)	9 (27)
	Dual Users	13 (40)

Expressed as a percentage of the total sample (N=33).

Themes

From participant reports, we found several themes that fit within the following three thematic categories: (1) barriers to quitting nicotine use during the pandemic; (2) facilitators to quitting or reducing nicotine use during the pandemic; and (3) suggestions for improving cessation programming during the pandemic. The breakdown of these themes, as well as associated frequencies of endorsement ('n' being the number of participants endorsing the category/theme/subtheme) and percentages (as a proportion of the total sample for categories and themes, and of the respective category for subthemes), are outlined in Table 2.

Table 2. Themes and subthemes discussed by participants and associated frequencies (n) and percentages (%) of participants endorsing these

Categories ***(n, %*)***	**Themes** ***(n, %*)***	**Subthemes** ***(n, %**)***
Barriers to quitting/reducing nicotine use during the pandemic ***(21, 64%)***	**Isolation, uncertainty, and shifts in environment and lifestyle** (due to fewer activities, increased boredom, diminished socializing, altered home social environment, loss of existing coping strategies/activities, etc.)	Smoking/vaping more to: • Curb boredom *(6, 29%)* • Cope with triggers *(3, 14%)* • Be able to go outside *(2, 10%)* • Get away from screens ("Zoom fatigue") *(2, 29%)* • Satisfy the need to use hands when engaging in repetitive activities (TV; homework) *(1, 5%)* Smoking/vaping more due to: • Not knowing if/where one could go outside the home *(2, 10%)* • Being away from workplaces that restricted use *(2, 10%)*

	(16, 48%)	• Being indoors with other users *(2, 10%)* • Not being able to spend time with non-users *(2, 10%)*

	Increased stress and worsened mental health (due to lack of support, reduced access to social and professional supports, etc.)
	
	(8, 24%)
		Smoking/vaping more to:
		• Cope with general stress and anxiety *(5, 24%)*
		• Cope with work-related stress and anxiety *(3, 14%)*
		  ○ Due to working from home (blurring of boundaries between work/home) *(2, 10%)*
		  ○ Due to working in-person (fear of getting sick; less time off; burnout) *(1, 5%)*
		
		Smoking/vaping more due to:
		• Lack of COVID-specific mental health supports *(3, 14%)*
		• Lack of incorporation of general and COVID-specific trauma (e.g., deaths of loved ones) and associated vulnerabilities of certain populations in supports *(1, 5%)*

Facilitators to quitting/reducing nicotine use during the pandemic ***(11, 33%)***	**Reduced access to nicotine products and opportunities for usage** (due to fewer/restricted social events, business closures, etc.) *(6, 18%)*	Smoking/vaping less due to: • Less opportunities to be around users *(3, 27%)* • Less social pressure *(3, 27%)* • Inability to purchase smoke/vape products (e.g., underage vapers) *(1, 9%)*
	Increased introspection and reflection on own behaviours (due to increased time alone) *(5, 15%)*	Smoking/vaping less to: • Improve own lung health *(2, 18%)* • Save money (to travel, see loved ones) *(2, 18%)* Smoking/vaping less due to: • Seeing others quit during the pandemic *(2, 18%)* • Fear of contracting COVID *(1, 27%)* • Identifying new cognitive strategies to cope with negative emotions *(1, 27%)*
Suggestions for improving cessation programming during the pandemic ***(19, 58%)***	**Enhance social support features** (virtual and in-person) *(11, 33%)*	Virtual supports: • Zoom meetings *(3, 16%)* • Discussion forums *(3, 16%)* • Group chats *(2, 11%)* In-person supports: • Small support groups *(2, 11%)* • Plans for in-person activities when restrictions ease *(2, 11%)*
	Increase awareness of quitting benefits during the pandemic *(7, 21%)*	Health benefits: • Discuss health implications of smoking/vaping and quitting *(4, 21%)* Financial benefits: • Discuss financial implications of smoking/vaping during pandemic layoffs *(3, 16%)* • Provide financial incentives (monetary rewards) *(1, 5%)*

	Provide pandemic-specific resources and advice for trying to quit during the pandemic *(5, 15%)*	Target visible locations for dissemination: • Social media *(4, 15%)* • In-person locations where people are able to go (grocery stores, health facilities) *(2, 11%)* Include culturally relevant practices for Indigenous nicotine users, e.g.: • Sweat lodges *(1, 5%)*

*Expressed as a percentage of the total sample (N=33).

**Expressed as a percentage of the respective category (n indicated in first column).

Barriers to quitting nicotine use during the pandemic

Numerous participants (64%) reported experiencing barriers to quitting nicotine use during the pandemic, particularly in relation to pandemic-specific isolation. Approximately half (48%) of all participants said the lifestyle limitations they experienced due to the pandemic were a barrier for them. Many participants described how isolation measures resulted in a reduction in activities individuals could attend, limitations on socializing, and subsequently, an increase in boredom:

> 'Last year for me personally, my partner and I planned on quitting and then COVID happened, and we didn't have anything to keep ourselves entertained so that's how we just fell back into the pit' (Participant 84, Indigenous female).

In this vein, individuals saw smoking and vaping as an activity to pass the time while being confined to their home environment, despite many not wanting to smoke or vape. In relation to boredom, one participant also described vaping to satiate the desire to do something with their hands while engaging in monotonous activities that became everyday activities during the pandemic, such as watching TV:

> 'Since COVID, [vaping] is just something to do especially if I'm like doing homework all day or watching something all day every day and want to do something with my hands' (Participant 94, Indigenous female).

In addition, participants highlighted pandemic-specific isolation as a barrier to being able to engage in the alternate activities and distractions they usually use to cope with nicotine-specific triggers and cravings. Participants also noted how isolation combined with uncertainty on what they were able to do outside the home in the context of provincial stay-home orders and recommendations created a unique situation which further magnified isolation as a barrier:

> 'Instead of smoking, we'd be going on a hike, or for a walk... That being said, I don't necessarily know the rules because of this pandemic and what's allowed' (Participant 32, male).

A couple of participants even reported that nicotine usage provided them with a reason to go outside during the pandemic when they were otherwise advised to remain indoors:

> 'While being stuck at home with the pandemic it was kind of nice to just have a break to get outside. I think for a while there, I wanted to smoke because I was spending all day, every day inside my house on Zoom, so smoke breaks were a way to get outside' (Participant 59, male).

Interestingly, a few more participants specifically described wanting to leave the house to engage in nicotine use after encountering unavoidable "Zoom-fatigue", or other computer-related fatigue due to elevated screen time as a result of the sudden transfer of school and work settings to virtual platforms:

> 'I think the hardest part is being busy all day long with Zoom fatigue or being on the computer all day during a pandemic. This is my primary source of employment and I'm finding that I just want to walk away from the computer sometimes, so I end up [leaving the house to smoke]' (Participant 34, male).

Similarly, a few participants described being home instead of at work all day proved problematic for them, as their work settings provided protective factors for reducing use through regulations or other environmental factors:

> 'If I had to go to work and be at work all day, I wouldn't smoke all day at work because according to my work I can't smoke. It's terrible right now during this pandemic where I'm home and I can [smoke all day]' (Participant 62, male).

Furthermore, some participants reported that being confined to their home environment created an inconducive environment for cessation, due to a lack of in-person support from family members, like being trapped in an environment with smokers:

> 'I never smoked before COVID, but with COVID you're hanging out with the same people in the same bubble so you're doing what everyone is doing together. I think once COVID restrictions ease up it might make it easier [to not smoke] and then you can go outside of your bubble and hang out with people who don't, like all my other friends don't' (Participant 29, female).

Another prominent barrier to quitting was an elevated level of stress during the pandemic and associated with this, poor mental health. While some participants just spoke of general stress due to the pandemic, several participants identified employment and school as specific stressors during the pandemic – both as a result of having to work at home or long hours outside the home. According to nearly a quarter (24%) of participants, nicotine use helped them cope with this stress:

> 'I'm working from home because of COVID. When I feel under a lot of pressure, I reach towards cigarettes...' (Participant 76, Indigenous male).

> 'COVID just added so much stress. I work in a produce warehouse, so I never really got time off. I've worked through this whole pandemic, and I never got one day off, and it wears on you. Plus, what if I get sick, I don't wanna think of that, so I [smoke]' (Participant 73, Indigenous male).

In addition, a few participants spoke of a lack of pandemic-specific mental health supports in the context of provincial stay-at-home regulations and ongoing COVID-related stress and trauma, which exacerbated existing barriers, created further barriers for coping with mental health, and led them to smoke and vape instead:

> '[The government] put [restrictions] down during COVID and put everyone under more stress with no mental health supports... I have a job, I have a nice house and I still can't get therapy… but I can [smoke]' (Participant 46, female).

> 'I've used the tools that [online provincial cessation supports] have to get away from smoking… But for some people or some populations, it really doesn't help sometimes. Like I work a very stressful job, and my life is very stressful, more than the average person. I've had four deaths in the last year. They talk about stress, but [don't] exactly target the added stress of calling family in and telling them people died. It just makes it hard' (Participant 76, Indigenous male).

Facilitators to quitting or reducing nicotine use during the pandemic

A third (33%) of participants reported encountering facilitators for quitting nicotine use during the pandemic. A major theme reported by 18% was that the pandemic reduced accessibility and opportunities to smoke/vape. A few individuals reported this was because they were unable to attend social gatherings (e.g., parties) that were often associated with peer pressure to smoke/vape:

> '... if you smoke or vape in a more social setting, that all goes out the window with the Coronavirus...' (Participant 13, male).

In addition, a few individuals discussed how reduced access to nicotine-related products due to store closures, lockdowns, and isolation measures made it easier for them to reduce their nicotine usage:

> 'My vape broke at the beginning of the pandemic when all the stores were closed and nobody was going anywhere. I wasn't able to fix it, and I couldn't exactly ask my parents to go buy me a new vape, so I ended up pretty much quitting around then which was not fun but in hindsight was a stroke of luck' (Participant 31, male).

> 'I do have one friend that quit, and he was somebody that said I'll never quit, it's not a problem, I'll do it my whole life . . . When COVID happened, and he couldn't go to any stores, he realized how horrible he felt because of it. And just from that one second and being like, okay, my lungs hurt less, it drove him to quit, which was motivating for me' (Participant 20, female).

As such, another facilitator commonly reported (15%) by participants was that the pandemic prompted individuals to become more introspective on their smoking/vaping behaviours, as well as on their behaviours that indirectly contributed to smoking/vaping, e.g.:

> 'Sometimes when I'm irrational and mad that will make me smoke and I learned to rationalize a lot more during this pandemic with all the time alone and away' (Participant 47, male).

Indeed, people approached introspection with a variety of motivations. For example, as quoted above, a few participants said witnessing someone in their social circle quit during the pandemic increased their own motivation for quitting. Similarly, some stated that they wanted to quit to improve their lung health given the elevated negative respiratory impacts of COVID-19 on smokers, and others said they wanted to save money for post-pandemic activities, such as traveling and seeing their families:

> 'I want to travel again. But now you can't travel. I'm saving up for travelling right now and not for vaping… if I save enough money, I might actually be able to see my family… I can actually go home after this silly pandemic is over' (Participant 73, Indigenous male).

Suggestions for improving cessation programming during the pandemic

Over half of participants (55%) made comments in reference to improvements they would have liked to see with online nicotine cessation supports during COVID-19. Participants had a variety of suggestions, such as identifying unique coping strategies for people who are more isolated due to COVID. The most common recommendation (33%) was to enhance social support features. The loss of social connection during the pandemic emphasized the need to ensure that social support was available to nicotine users in this context. In addition to in-person support groups, individuals advised that programming incorporate virtual support in the form of meetings via Zoom or online discussion forums to connect with others:

> 'I think organizing Zoom meetings or small group chats where you can say what you've accomplished and how you're struggling right now and then maybe create a few friends who are all trying to quit together' (Participant 37, male).

> 'Forums are a really positive thing as well, because it allows people to talk to each other, especially now with COVID. We're all isolated and quitting smoking, and when you're isolated it can be even harder, because we're all under stress. So, I think being able to have a connection like that through a community where people can talk to each other and feel support, even if it's online, is good' (Participant 46, female).

Many participants (21%) also suggested that programming increase awareness of the benefits of quitting specifically in relation to COVID-19. Individuals believed that since COVID-19 is a respiratory disease, widely disseminating information on the risks and health impacts of COVID-19 in relation to smoking/vaping would resonate with users:

> 'Smoking and COVID should be more prevalent. I think I think the COVID piece is a valuable thing to the developers to think about because it's such a hot word, and there's a lot of talk about respiratory illnesses' (Participant 48, female).

Participants also mentioned that, as people were more attentive to money-related matters during the times of unemployment from COVID-19 layoffs, discussing financial implications of smoking/vaping and providing monetary incentives and rewards to quitting might provide an additional motivation to quit during the pandemic:

> 'I guarantee if people are scrolling through this, and they see the average smoker spends $3,000 a year on cigarettes, especially during COVID when people are losing their jobs, that would be a pretty big selling point' (Participant 64, Indigenous male).

> 'I love Vancouver [BC], it's the best place in the world, but it's also ridiculously expensive. Right now, for a lot of people, money is a big issue because with COVID people are out of work. That is an incentive so giving something monetary would be a reward' (Participant 39, male).

Finally, several participants (15%) also highlighted a need for increased awareness of pandemic-tailored resources and advice for those trying to quit during the pandemic. Suggestions included advertising through social media and at locations that coincided with the lifestyle of the public during the pandemic (e.g., grocery stores and health centres). Additionally, as the pandemic resulted in boredom and a loss of previously established coping strategies, participants suggested activities to replace smoking/vaping and help people fill their free time and cope, including tailored and culturally relevant practices for Indigenous nicotine users:

> 'I think maybe having a different strategy for people that are more isolated throughout COVID versus once restrictions start easing out so maybe they could recommend some other strategies and distractions, let's say as an example, going for a walk' (Participant 29, female).

> 'I know some people who were chronic major smokers do like the sweat lodge, which helps clean you out and stuff, so having resources for First Nations people, say in Kamloops [BC], letting people know they they're going to do a smoking cleanse would be helpful. But I know with COVID its extremely difficult' (Participant 69, Indigenous female).

DISCUSSION

The present study highlights the impacts of the COVID-19 pandemic on individual nicotine cessation journeys. In addition, it establishes the importance of cessation support remaining up-to-date and considering the new and ever-changing psychosocial and socio-environmental factors that come with a global crisis. Finally, it speaks to the significance of centering participant voices and learning firsthand from nicotine users about their unique needs as it relates to barriers and facilitators to successfully quitting nicotine use.

The pandemic revealed unique vulnerabilities of nicotine users that were not previously emphasized, such as the effects of boredom, stress, and isolation. Isolation was a noteworthy barrier to quitting tobacco use according to this study. It is important to situate the concept of isolation within the macro-level socioenvironmental determinants that led to isolation for this sample. At the time of data

collection, the Province of British Columbia had authorized a number of COVID-specific protective measures such as restricting capacities at gatherings, businesses, and private events, including partial or complete closures; suspending interprovincial travel (in addition to federal international travel bans); introducing vaccines in age- and vulnerability-based phases (e.g., elderly and Indigenous populations first); and enacting specific restrictions for the partial- and non-vaccinated [22]. Measures were variable to sudden changes in accordance with the evolving nature of the pandemic [22]. As such, many participants talked about how isolation as a result of the above led to immense boredom. Boredom has been found to play a key role in increased alcohol and cannabis consumption during the pandemic [23], and our findings reveal that this similarly applies to use of tobacco products. The inability to engage in routine activities (e.g., outdoor activities, regular exercise routines), as well as novel activities (e.g., travel), that often served to distract them from using nicotine resulted in many participants turning to nicotine to help them pass the time. This finding is in line with other research identifying how nicotine use tends to increase when routines are disrupted, and boredom is resultantly increased [24-25].

In addition, the pandemic context is unique due to the addition of uncertainty to isolation. Some participants discussed not even knowing where they could go if they were to leave their house due to the nature of restrictions. Combining this with the global atmosphere of not knowing if and when the pandemic will end, this finding speaks to how nicotine users may have felt a loss of control over their lives, and as such over their abilities to maintain quit status, begin their quit journeys, and/or prevent relapse. As such, the ongoing impact of isolation as well as associated feelings of diminished control over outcomes cannot be underestimated, and our study findings foreground its role on tobacco use behaviors, which is largely negative.

It is also interesting that individuals spoke about continuing to smoke in order to go outside, versus going outside in order to smoke, as well as mentioned several unique motivators for doing so, such as encountering “Zoom-fatigue” as a result of educational and employment settings being shifted to remote formats. The pandemic appeared to create a shift in focus (being outside or getting away from screens rather than satisfying a craving) in relation to smoking. Having to go outside for a smoke has been previously perceived as a “hassle”, particularly after public smoke-free bans came into place [26]. However, going outside for a smoke during the pandemic appears to have shifted this perspective among some smokers, wherein smoking was perceived as something that enabled a needed respite from the monotony of being indoors. Public health measures would benefit from considering the nature of tobacco use when implementing stay at home orders, and particularly consider how removing the ability to leave one’s home – especially in the context of the pandemic-resultant rise in remote and hybrid work – can perpetuate health risk behaviors, like smoking. Given that distractions have been identified as a key affordance to quitting [27], ensuring that healthy distractions, for example games and opportunities for inter-user communication embedded within web- and app-based quit supports, are accessible and available during and after the pandemic is essential.

Some individuals found pandemic isolation to make it easier to quit because there were fewer opportunities to experience social (“peer”) pressures around nicotine use; there were fewer parties and gatherings, and fewer opportunities to socialize with others who smoke/vape. On the other hand, living with other nicotine users and not being able to leave a shared environment due to lockdown measures proved a major barrier to quitting. Our findings corroborate existing studies that highlight how the opinions and behaviors of peers play a significant role in nicotine use maintenance [28]. However, as

isolation and not seeing peers proved to be both a risk factor and a protective factor for increasing nicotine use, it is fundamental to note that that these findings are pertaining to exposure to social influences and contexts, and not social support. Social support is an integral element of cessation [29], and reduced connection with others due to the pandemic further highlights this. In this regard, and according to the findings, the pandemic increased the perception that enhancing social support in existing cessation supports should be prioritized, such as through forums, virtual and in-person support groups, coaching, and buddy systems, among others.

Although participants spoke about general pandemic-related stress and anxiety and their impact on increased use, many participants also discussed stress specifically associated with working from home, being laid off, or working in-person during the pandemic. Indeed, the pandemic introduced a myriad of sources of job-related stress, including layoffs, reduced income, reduced job security, and, for remote workers, a diminished ability to 'leave work at work' [30]. For in-person and essential workers, the pandemic led to lengthy work schedules, minimal time off, diminished time to engage in coping and stress-relieving strategies that hadn't yet been impacted by the pandemic, increased burnout, and increased susceptibility to the COVID-19 virus [31]. Previous literature has found that increased stress and anxiety about employment and finances is associated with greater nicotine consumption [32]. Therefore, it makes sense why nicotine users smoked/vaped more to cope with pandemic-specific financial and employment stress and reveals how nicotine users are particularly vulnerable from a health risk perspective in the context of job loss, job instability, and burnout. Some nicotine users decided to quit or reduce use to save money in order to access protective factors such as travel (distractions), and visiting family (social support), emphasizing that the financial benefits of quitting may then be particularly relevant within a pandemic and post-pandemic context.

Finally, participants spoke of the traumatic stress of coping with pandemic-related deaths, and the lack of supports addressing COVID-specific traumas, which brings to light the need to incorporate both general and pandemic-related trauma into cessation supports that target mental health. It is well-established in the literature that most substance use, including nicotine use, tends to emerge as well as heighten when individuals experience trauma and feel unable to cope with it [33]. This further taps into the concept of nicotine users experiencing loss of control over life outcomes and subsequently succumbing to triggers and relapses. With almost 763 million deaths worldwide as a result of COVID-19, pandemic-related trauma continues to remain heavily significant and must be addressed by cessation supports through appropriate mental health resources, such as trauma-informed training for quit coaches, recommendations for virtual, 24/7 suicide-prevention services, and meaningful social supports [34].

Specific populations, such as Indigenous peoples, are overrepresented in facing heightened adversities, including those from COVID-19 [35]. Indeed, Indigenous participants described needing to work in-person during the pandemic, wanting to but being unable to see their families, and experiencing a greater amount of COVID-related trauma than others they knew. As such, cessation supports must provide unique, culturally responsive considerations for Indigenous nicotine users, for example by incorporating support and wisdom from Elders and bands, allowing for family and community engagement, engaging in traditional and ceremonial activities such as sweat lodges, providing support in the form of Indigenous quit coaches, and, finally, engaging Indigenous voices and individuals in developing these interventions [21].

In sum, the findings of this study indicate the need for interventions to incorporate elements addressing the unique susceptibilities experienced by users, such as the effects of isolation and stress, as these are states likely to persist beyond a pandemic context. Examples of these may include tools and strategies such as gamification to incorporate distractions, or tailored financial incentives. In addition, the findings emphasize the need to offer online and hybrid cessation services as well as novel modalities for information dissemination (e.g., Instagram and TikTok ads, Zoom groups, app-based cessation programs) as the literature has demonstrated that the pandemic caused significant drops in traditional, in-person cessation program enrolments [36-37]. By implementing participant suggestions, many barriers stated by individuals could potentially be eliminated or minimized. Finally, when developing new programs for cessation, we must also ensure that people who face greater systemic barriers, such as Indigenous and rural populations, can access these supports [38].

Strengths and Limitations

This research has several limitations. First, interviews are subject to recall and social desirability biases. Second, as participants were solely from BC, Canada, participants' experiences may not be representative of experiences in a broader group of nicotine users. In addition, it must be noted that BC implemented pandemic response measures differentially from other provinces and countries, which may limit the transferability of the findings to individuals in areas where the response measures were different from that of BC. Third, since we did not directly ask questions about the COVID-19 pandemic, not all participants from the primary project provided their opinions. It is possible more participants would have provided in-depth information if intentional questions surrounding the pandemic had been incorporated into the original interviews. Fourth, due to our selection of keywords, it is possible some statements about COVID-19 and the pandemic could have been missed. Fifth, given that data were collected during a specific time period (May to August 2021), sociocultural and policy changes evolving with the pandemic may have continued to influence cessation needs beyond the scope of these findings. Finally, our sample may be unique in that participants may belong to a higher socioeconomic status than the general population of nicotine users worldwide as indicated by access to a desktop or mobile device and an Internet connection. Despite these limitations, this study has some noteworthy strengths. First, drawing secondary data from a very large primary study allowed for maximum variation across a range of sample characteristics, providing a rich dataset from which to develop themes. Next, our use of inductive qualitative methods enabled a detailed analytical approach. Finally, collecting rich interview data over months allowed us to capture nuanced, as well as consistent themes in the context of an ever-changing pandemic landscape in real time.

CONCLUSIONS

This qualitative study provides a snapshot into the lived experiences, needs, and desires of nicotine users motivated to quit during the COVID-19 pandemic. While isolation from the pandemic lent to some facilitators to quitting (e.g., reduced exposure to social pressures), participants reported a broader number of barriers to quitting associated with isolation. In addition, stress, especially financial stress, associated with the pandemic played a critical role in disrupting cessation efforts. Cessation programming would benefit from considering these unique impacts of the pandemic on cessation.

ACKNOWLEDGEMENTS

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COMPETING INTERESTS STATEMENT

The authors have no conflicts of interest to declare.

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AUTHOR CONTRIBUTIONS

RS oversaw participant recruitment, data collection, interview transcription, primary data analysis, and conceptualization of the manuscript. LS, as senior author, conceptualized and designed the greater project and research protocol, and obtained research funding. DR led conduction of secondary data analysis. RS and DR jointly developed the manuscript, with LS overseeing and providing feedback on draft versions. All authors have seen and approved the final version.

PATIENT CONSENT

As the present study involved secondary analysis of primary data, participant consent was not required as they had previously consented to the primary study.

ETHICAL APPROVAL

Behavioral Research Ethics Board at the University of British Columbia's Okanagan campus (#H21-00145).

DATA SHARING STATEMENT

Data for this study are de-identified participant data (qualitative interview transcripts) obtained for a primary study with informed consent provided by participants within the primary study. We have uploaded the semi-structured interview guide as a Supplementary File. To protect participant identities, we do not intend to share participant interview transcripts in a repository. Data reuse is not permitted without permission and consideration from the authors due to privacy. For all inquiries about data, please contact Ramona Sharma - ORCid: 0000-0001-5907-7035.

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QUITNOW RESEARCH STUDY PROTOCOL

INTERVIEW GUIDE FOR NON-INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

NOTE:

- Try your best to interview the participant as close to 1 hour as you can
  - Take your time – if you are not rushed, then participants will feel less rushed to answer your questions
  - Pause for a few seconds after participants answer – this will prompt participants to add more to their answer. Saying something like "*mhm…*" after they answer as if you are expecting them to say more.
  - Encourage participants to take their time with their responses.
- Encourage creative thinking
  - Do not limit participants with what they believe is possible. People do their best creative thinking when they do not think about practical constraints.
- Try to ask as many open-ended (vs. Closed-ended) questions as possible
  - Example of a closed-ended question: *Do you like that?*
  - Example of an open-ended question: *What do you like about that?*
- Phrases you can use to prompt participants to talk more:
  - *Tell me more about ____.*
  - *How can you see ____ being incorporated into the website?*
  - *How can you see ___ (flaw of the website)___ being fixed?*
  - *What else?*
- Responses to difficult answers:
  - Participant: there's nothing I don't like about it! It's great!
    - Answer: *"What's so great about it?"*
    - Answer: *"What can make it better?"*
    - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*
    - Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

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Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it
    - *If they haven't had a chance to do it, screen share the questionnaire and complete it with them.
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Consent – ongoing process (can discontinue at any point)
6. Questions?
7. Interview is being recorded – is that okay? *start recording*
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How did (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
6. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
7. How would you like to receive support on QuitNow?
8. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
9. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
10. What do you think of incorporating support for quitting e-cigarettes on QuitNow?

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   a. How should it be different to cigarette cessation support?
   b. How should it be similar?
11. What additional features would you like to see on QuitNow?
12. Do you have any suggestions for improving the look and feel of QuitNow?
13. Would you recommend QuitNow to your friends/family? Why or why not?
14. How could we get the word out that QuitNow exists?
15. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
16. Outside of QuitNow, what are other aspects of your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
17. For current QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
18. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
19. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?
20. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
21. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

- Which vendor would you like to receive your $50 honorarium for?
- Would you live to be contacted to participate in a follow-up study?
- Would you like to receive the results of the study once they are published?

After the Interview

1. Update spreadsheet (OneDrive):
   a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up contact, would like to receive the results of the study)
   b. Record if they would like to participate in a follow up focus group
   c. Record if they would like to receive results of the study
2. Upload to OneDrive
   a. Recording
   b. Questionnaire
3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
   a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
   b. E.g., "#23, F, N" for participant number 23, female, QuitNow non-user

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        - Answer: *"What's so great about it?"*
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        - Answer: *"I'm glad you like it so much! We're also interested in what you don't like about the website, as insignificant as it may be – where do you think the website can improve?"*

Answer: "*On a scale of 1-10, how confident do you think this website will be in helping you quit?*" - if below 10, ask "*how could the website be changed so that your answer is 10*?"

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8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.
9. Remind participants that we are not QuitNow employees and that they can share any type of feedback.
10. Encourage participants to open up the website while they are conducting the interview

QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

1. Let's start with the overall look and feel.
    a. What is your initial reaction?
    b. How could it be improved?
2. What aspects of the website did you like?
    a. What would you find helpful in quitting smoking?
    b. What would keep you coming back?
3. What did you not like?
    a. What are the major limitations of the site?
    b. What makes you not want to come back to it?
4. How would you like to receive support on QuitNow?
5. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
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11. Would you recommend QuitNow to your friends/family? Why or why not?
12. What might be some barriers (e.g., stress, friends/family who smoke) to quitting? How could/should these be mitigated by QuitNow?

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13. Would you be more likely to use QuitNow on your mobile device or laptop?
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- Would you like to be contacted to participate in a follow-up study?
- Would you like to receive the results of the study once they are published?

After the Interview

1. Update spreadsheet (OneDrive):
    a. Ensure participant information is updated (i.e., smoke status, vape status, QuitNow user, age, gender, consent, questionnaire, interview, honorarium, agree to follow-up, would like results of the study)
    b. Record if they would like to participate in a follow up focus group
    c. Record if they would like to receive results of the study
2. Upload to OneDrive
    a. Recording
    b. Questionnaire
3. **Ensure files are labelled with participant ID, gender, and QuitNow status **
    a. E.g., "#23, M, Y" for participant number 23, male, QuitNow user (Y)
    b. E.g., "#23, F, N" for participant number 23, female, QuitNow non-user

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INTERVIEW GUIDE FOR INDIGENOUS CURRENT QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it; if they haven't had a chance to do it, go through it on share screen
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
6. Interview is being recorded – is that okay?
7. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.

QuitNow Questions (~50 minutes)

We are now going to ask you to walk through the QuitNow website and talk about what aspects of it worked well and which ones did not. So, to start…

1. Do you/have you used QuitNow on your mobile device and/or laptop?
2. How did you hear about QuitNow?
3. How have you used QuitNow to help you quit?
4. Why did you start using QuitNow? What kept you coming back? OR Why did you not use it/stop using it?
5. We understand that you identify as Indigenous. Which nation do you belong to?
6. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
7. What other aspects of your nation's culture or of Indigenous culture in general might be honored in QuitNow?
8. What about QuitNow do you like the most?
    a. Which aspects do you use the most?
    b. How (said aspects) help you in reaching your goals of reducing or quitting?
    c. Can you tell me about a time when (said aspect) helped you?
    d. How could this aspect be improved/even better?
    e. What aspects of QuitNow resonate with your nation's culture or Indigenous culture in general as you understand it?

9. What about QuitNow do you not like?
    a. What were its limitations in relation to your efforts to reduce/quit?
    b. What were you hoping for instead?
    c. How could this limitation be addressed (e.g., should it be removed, or could it be improved)?
    d. What aspects of QuitNow do not resonate with your nation's culture or Indigenous culture in general as you understand it? How could this be addressed?
10. How would you like to receive social support on QuitNow?
11. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
12. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?
13. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
14. What additional features would you like to see on QuitNow?
15. Do you have any suggestions for improving the look and feel of QuitNow?
16. Would you recommend QuitNow to your friends/family? Why or why not?
17. How could we get the word out that QuitNow exists?
18. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
19. What might be some barriers (e.g., stress, friends or family who smoke)? How could/should these be mitigated by QuitNow?
20. For QuitNow users: You have told me that you have [reduced/quit/no change in] smoking since you were first introduced to QuitNow. What do you think has been the biggest influencing factor? Overall, how helpful has QuitNow been to you?
21. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
22. If you could have anything you wanted (i.e., in an ideal world), what would you want QuitNow have/do for you?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

way' limləmt,| thank you

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INTERVIEW GUIDE FOR INDIGENOUS POTENTIAL QUITNOW USERS

Preparation (using Zoom for interviews)

1. AV check
2. Recording ready (recording app on phone)
3. Materials for sharing uploaded (questionnaire, interview guide, consent form)
4. Facilitator notes
5. Ensure consent for all participants has been received
6. Make sure phone calls are blocked from phone

Welcome/Instructions for Facilitators (5 minutes)

1. Hello, thank you for taking the time
2. Introduce yourself
3. Questionnaire – thank them for completing it; if they haven't had a chance to do it, go through it on share screen
4. Purpose of the study: to invite BC residents to provide their input of the smoking cessation service, QuitNow.
5. Questions?
6. Confirm that they have looked through the QuitNow website
7. Interview is being recorded – is that okay?
8. Acknowledge that this research is taking place on the unceded territory of the Syilx/Okanagan people.

QuitNow Questions (~30 minutes)

Before this interview, you were asked to take a look at the QuitNow website, so I want to now hear about your reactions to the website and what it currently offers.

1. Let's start with the overall look and feel.
    a. What is your initial reaction?
    b. How could it be improved?
2. What aspects of the website did you like?
    a. What would you find helpful in quitting smoking?
    b. What would keep you coming back?
3. What did you not like?
    a. What are the major limitations of the site?
    b. What makes you not want to come back to it?
4. How would you like to receive support on QuitNow?
5. Would you want the QuitNow forum to have discussion threads?
    a. If you were at week 1, would you want to hear about what others did during week 12?
    b. Alternatively, would you like to see threads based on themes (e.g., struggles, successes, triggers, motivations, etc.)?
    c. Or do you prefer to just have an open forum?
6. What types of information would you like to see on QuitNow (e.g., benefits of quitting, consequences of not quitting, stories from others, tips to stay nicotine-free, suggestions for distractions, what to expect, etc.)?

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7. What do you think of incorporating support for quitting e-cigarettes (e.g., Juul) on QuitNow?
    a. How should it be different to cigarette cessation support?
    b. How should it be similar?
8. You mentioned that you identify as Indigenous. Which nation do you belong to?
9. We understand that tobacco is considered a medicine in some Indigenous cultures. Is that the case with your nation as well?
    a. How should this be honored in QuitNow?
10. What other aspects of your nation's culture or of Indigenous culture in general might be honored in QuitNow?
11. Outside of QuitNow, what are other aspects in your life that help facilitate reducing/quitting (e.g., social support, willpower, etc.)? How could/should these be incorporated into QuitNow?
12. What additional features would you like to see on QuitNow?
13. Thinking about what we have talked about so far, if you could provide the developers of QuitNow with some advice, what would it be?
14. Would you recommend QuitNow to your friends/family? Why or why not?
15. What might be some barriers (e.g., stress, friends/family who smoke) to quitting? How could/should these be mitigated by QuitNow?
16. Would you be more likely to use QuitNow on your mobile device or laptop?
17. If you could have anything you wanted, what would you want QuitNow have/do for you?
18. How could we get the word out that QuitNow exists?
19. If we were to do a follow up study with a focus group, would you be interested in taking part in that? We will contact you if we do this.
20. Would you like to receive the results of the study once it is published?

Closing: final comments (5 minutes)

Thank you for joining me today and helping us understand more about what we can do to improve BC's largest smoking cessation service. This will help us to tailor the website so that it is better able to meet the needs of BC residents who are trying to quit smoking or vaping. We are at the end of this session but before we leave, do you have any final thoughts that you would like to share?

way' limləmt,| thank you

Reporting checklist for qualitative study.

Based on the SRQR guidelines.

EXPERIENCES OF NICOTINE USERS MOTIVATED TO QUIT DURING THE COVID-19 PANDEMIC: A SECONDARY QUALITATIVE ANALYSIS

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		Reporting Item	Page Number
Title			
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1-4
Abstract			
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	2
Introduction			
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	3-4

Purpose or research question	#4	Purpose of the study and specific objectives or questions	4
Methods			
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	4-6
Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	5-6
Context	#7	Setting / site and salient contextual factors; rationale	5-6; 13-14
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	5-6
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4-5
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative	4-6

		process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	5-6
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5-7
Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	4-6
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	4-6
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	5-6
Results/findings			
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6-13
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	9-13
Discussion			
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application /	13-16

		generalizability; identification of unique contributions(s) to scholarship in a discipline or field	
Limitations	#19	Trustworthiness and limitations of findings	16
Other			
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	17
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	17