

**“I’m bored and I’m stressed”: A qualitative study of exclusive smokers, ENDS users, and transitioning smokers or ENDS users in the time of COVID-19**

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## Abstract

**Background:** To better understand the various influences of COVID-19 on tobacco use, we examined three different tobacco user groups using qualitative methods.

**Methods:** Ten online focus groups with 61 adults from the Atlanta, GA area were held in October-November 2020: four with exclusive smokers (n=16), three with Electronic Nicotine Delivery System (ENDS) users (dual and exclusive, n=22), and three with transitioning (recently quit or currently quitting) smokers and/or ENDS users (n=23).

**Results:** Exclusive smokers reported smoking more frequently, driven by COVID-19-related stress, time at home, and boredom. They were not motivated to quit during the pandemic, and some considered smoking to be protective against COVID-19. ENDS users reported vaping less, with dual users often increasing their smoking; many were concerned about health effects of smoking and ENDS use during the pandemic. Transitioning smokers/ENDS users worried about their health and wanted to quit, but many found the stress of COVID-19 unbearable without tobacco use.

**Conclusions:** There were some similarities among the groups, but also pronounced differences. Educational campaigns should capitalize on the teachable moment of COVID-19 to increase perceived risk of smoking. Smokers need access to more adaptive ways to deal with stress (such as mindfulness training) in lieu of smoking and systems-level approaches should address structural determinants of health that cause high levels of stress. The proposed policy to lower nicotine in combusted tobacco products might help smokers choose other means of coping instead of cigarettes by reducing the stress-relieving properties of smoking particularly salient during the pandemic.

**Implications:** Smokers believe that cigarettes help them deal with the stresses and challenges of the COVID-19 pandemic. This needs to be counteracted by educational campaigns to increase perceived harm of smoking, alternative stress-relief strategies, and mandated changes to the combusted tobacco products to make them less appealing.

## Introduction

The COVID-19 pandemic has upended many lives. Across the globe, millions have been getting sick and dying, companies have closed, cities and states went into lockdown, workers lost their jobs, and schools and businesses have switched from in-person to distance learning and remote working. These changes resulted in negative outcomes such as increased stress, loneliness, and boredom, but also positive ones like spending more time with the family and opportunities for personal growth.<sup>1</sup> Such social disruptions often result in changes in health behavior.<sup>2</sup>

Tobacco use is the leading cause of preventable death and disease and has been killing more than twice the number of people as COVID-19 (tobacco: ~7 million/year;<sup>3</sup> COVID-19: ~3 million/year<sup>4</sup>). Studies conducted since the onset of the pandemic indicate that some tobacco users increased their consumption, some decreased, some quit, and some relapsed.<sup>5-10</sup> There has also been emerging evidence that smoking exacerbates the severity of COVID-19 symptoms.<sup>11</sup> Randomized experiments<sup>12</sup> and surveys have shown that knowledge of the greater risk from COVID-19 for tobacco users motivates some to quit tobacco product use.<sup>13,14</sup> These disparate transitions warrant an in-depth look at the lived experiences and understanding of smokers and Electronic Nicotine Delivery Systems (ENDS) users that qualitative research can provide in order to explore the context to promote and support tobacco use cessation.

In most cases, qualitative studies on the impact of COVID-19 on tobacco use published so far (this literature is growing rapidly) were conducted early during the lockdown and interviewed participants already enrolled in existing trials.<sup>15-17</sup> Giovenco et al.<sup>18</sup> interviewed smokers and ENDS users across the US who reported a complex pattern of COVID-related increases, decreases, and lack of change in tobacco consumption with increases driven primarily by individual-level factors, such as anxiety, boredom, and changes in routines. Because smokers and ENDS users are not a homogeneous group, examining different groups of smokers separately might help explain the different patterns of change and the factors that influence these changes in smoking behavior.

In our study, we examined three classes of tobacco users, grouped by their behavior (smoking and ENDS use) and at different stages of the quitting process. Specifically, we conducted focus groups with (a) current exclusive smokers who were not trying to quit, (b) current ENDS users (exclusive or dual use with cigarettes) who were not trying to quit, and (c) transitioning tobacco users (cigarettes and/or ENDS) who have quit since the start of the pandemic or were in the process of quitting at the time of study. Interviewing and analyzing these groups separately allows for more nuanced understanding of their experiences, beliefs, and the factors influencing their health behaviors in the time of COVID-19. We conducted our study about 6 months after the start of the pandemic, which allowed us to examine both the initial disruptions of the lockdowns and the longer-term reactions to the “new normal”.

## **Methods**

### **Participants**

Participants were recruited by PVR Research, a field service marketing research firm in Alpharetta, GA, from their consumer database, which consisted of consumer households in the greater metro Atlanta area. These consumers have all voluntarily opted-in to be contacted regarding potential research participation. The recruitment material noted that focus groups would discuss cigarette and ENDS use and COVID-19. Of 2,578 panelists who took the screener, 468 qualified based on the enrollment criteria (18+ years old and fitting in one of the groups described below; screening questions are provided as online-only supplement). The qualified panelists were then called by a PVR recruiter to rescreen their answers and to ensure they had the technical capability to participate in an online focus group. Overall, 77 were invited for the focus groups, and 61 participated. Participants provided informed consent and received \$50 for their time.

We conducted four focus groups with exclusive smokers (smoked at least 100 cigarettes in their lifetime, were currently smoking every day or some days, were not currently trying to quit, and were not currently using ENDS; n=16); three groups with ENDS users (currently use ENDS every day or some days, and not currently trying to quit ENDS; n=22), and three groups with transitioning

smokers and/or ENDS users (n=23). “Transitioning” was defined as moving from being a user to quitting either cigarettes or ENDS: transitioning smokers (smoked at least 100 cigarettes in their lifetime and either quit since February 2020 or were currently trying to quit); transitioning ENDS users (quit using ENDS since February 2020 or were currently trying to quit using ENDS). The number of participants ranged from 2 to 8 (median=7), with only one group with 2 participants due to multiple no-shows.

## **Procedures**

Online Zoom focus groups were conducted in October-November 2020. Trained moderators (including co-author MSL) from John Snow, Inc. facilitated the focus groups using a semi-structured guide developed by our team to cover the topics of participants' knowledge, attitudes, and perceptions of smoking and ENDS as it relates to COVID-19, how COVID-19 affected their lives and tobacco use, and their cigarette and/or ENDS quitting behavior. Research team members closely observed the first focus groups and met as a team (that included the moderator) to discuss the flow of the questions and whether any adjustments were necessary; we found that the questionnaire worked well, participants understood the questions and were engaged, and no adjustments were needed. (Focus group moderator guides are available as online-only supplement). Both the video and the audio were recorded through the Zoom application. The online focus group sessions lasted between 45 and 82 minutes. All focus groups were transcribed verbatim for analysis. This study was approved by the Georgia State University IRB.

## **Data Analysis**

Data were analyzed in NVivo version 12.0, using an inductive thematic analysis approach.<sup>19</sup> Three of the co-authors read two transcripts each and the first author read all the transcripts and developed the initial codes, which were then discussed with the research team. Using the drafted codebook, KH and NK independently coded one randomly selected transcript and met with the first author to discuss and resolve discrepancies in coding and to revise the codebook. The discrepancies and revisions were very minor. Using the revised codebook, KH and NK split and coded the

remaining transcripts. Next, the extracted codes from the transcripts were divided among research team members who read them and wrote summary memos on key themes. Themes were defined on the basis of discussion of a topic across multiple groups. Each team member read multiple codes across all three participant groups and wrote summary memos separately for each participant group with different use behavior. All the co-authors read the coded excerpts and then summarized their findings for each tobacco user group for each theme. All the authors discussed these summaries as a group and came to a consensus regarding the theme representation for each user group. The first author then read all the memos and re-read the corresponding transcripts and synthesized the results. The focus of the data analysis was on searching for, reviewing, defining, and naming themes. The codes we used served as a process to arrive at the final themes, the codes themselves were not the final product.

## Results

Participants' demographics and tobacco use behaviors and intentions are reported in Table 1. Overall, 61% identified as female, 61% were White, 29% were Black, and 55% had a college or postgraduate degree.

### **Exclusive smokers: "I'm smoking a whole lot more"**

Among current exclusive smokers, many reported smoking more frequently because of several COVID-related changes. For many, it was the stress caused by loved ones getting sick, having to take care of children who were studying at home, and the financial insecurity or loss of job. "With the stress of different family members being sick and passing from it, that stress made me smoke even more" (female, 52, Black, Exclusive Smokers group 2 [ES2]). Working from home provided an opportunity to smoke more because of a less structured schedule, lack of smoking-related stigma, and absence of reinforcement from non-smoking workplace limitations. As one participant put it, "I am a closet dental smoker. I'm a dental assistant. So I tell my patients, please do not smoke, but when I get home, I'm smoking. And obviously since I'm not working, I'm smoking a lot more" (female, 44,

White, ES1). Finally, some smoked more because of boredom: "I got back down to about a half a pack a day. Now I'm back up to a pack a day, because there's nothing to do. You're bored because there's only so much cleaning you can do" (female, 57, White, ES1). In addition, a few smokers indicated that their smoking habits did not change, but only one mentioned decreases in smoking, mostly to reduced time in social situations.

We examined whether "some days" smokers (who might be less dependent or more likely to be social smokers) had different experiences, but only one person among non-daily smokers mentioned reducing smoking due to decreased social opportunities and the rest either stayed at the same level or increased their smoking.

The increased smoking was generally not seen as a cause for alarm or a quitting motivation by the participants. While some exclusive smokers thought they needed to quit, most felt that the timing was not right, for example: "I don't think it's a good time to try, right now, because of just everything else that's going on. It's like this is one thing you got to ... get through this" (female, 60, White, ES3). This group rarely discussed how smoking might exacerbate COVID-19 symptoms. Many participants who commented on the link between COVID-19 and smoking began by stating that they had not heard or seen anything directly about the topic, and that this link was uncertain or speculative. In contrast, several participants discussed how smoking, and nicotine in particular, can be protective against coronavirus: "I'm not the only one who's heard that, it was on the news, that doctors were wearing nicotine patches to help them not catch corona. And like I said, I've been exposed and I'm good" (female, 30, Black, ES2).

Exclusive smokers were also not motivated to switch to ENDS during COVID-19. While ENDS use in this group was only rarely mentioned, one participant explicitly discussed not wanting to use ENDS during COVID-19: "So I did a lot of the e-cigarettes and those sorts of things before COVID, but I purposely didn't during COVID, because I wanted the real deal. This was uber stressful, and so I needed something that would do it for me, I don't know, without... I purposely didn't want to

pick a flavor, and I purposely didn't want to pick a different product to see what hit home with me” (female, 54, White, ES4).

### **Current ENDS users: “Vaping has definitely tanked”**

Current ENDS user groups comprised both exclusive ENDS users (n=7, among whom one was a former smoker and the others reported being never smokers) and dual users of ENDS and cigarettes (n=15). We examined exclusive and dual ENDS users separately.

Several exclusive ENDS users reported reducing their use of ENDS, either due to social reasons or health fears. For example, one woman shared: “I've done it less, because I do it more like being out at a bar or something. And I'm not really going out anymore, or not as much” (31, White, ENDS Users group 1 [ENDS1]). Another participant described: “When corona first came out they said that it attacks the lungs. And you think of it to where you think vaping will make you more risky to have it. So, I think I feel like I might have slowed down on my vaping habits, but it's kind of hard to do that” (male, 23, Asian, ENDS1).

Among dual users, there was a complex interplay of increases and decreases in tobacco use, but the predominant theme was decreased vaping and increased smoking. Multiple participants reported vaping less and smoking more because smoking was easier, cheaper, and more familiar. One participant (female, 36, White, ENDS2) used ENDS because they produce a less offensive smell, but “now I'm not around people as much, so the smell doesn't matter as much. So I definitely think I smoke more now.” For her, “it was easier to just smoke a cigarette than it was to vape.” Other reasons for smoking more cigarettes were similar to the ones reported in other groups and included dealing with stress (“the walls start to close in;” female, 38, Black, ENDS3); boredom; and working from home.

In contrast to those who reported reducing their ENDS use, a few dual users (one in each of three focus groups) reported using ENDS more during the pandemic. Some had home rules that prohibited smoking but allowed ENDS use: “it's nice to not have to go outside. [...] Every time I smoke a cigarette I got to go outside. I probably use the vape more than I used to because I'm home



more. I'm inside more" (female, 34, White, ENDS3). Others had family members who disapproved of smoking: "I much rather prefer a cigarette, but I don't want my backyard or my front door smelling like a cigarette for my husband" (female, 58, White, ENDS3). And a few dual users mentioned smoking less because they were not going out as much, resulting in decreased social opportunities to smoke. Some reduced their smoking (and vaping) because of the health concerns: "I immediately in March started smoking less because I was thinking about it all the time. So I did smoke and vape less" (male, 48, White, dual user, ENDS1); "I wanted to lower the risk, I mean, we're wearing the face mask just to lower the risk. For me, It's part of the kind of risk assessment. So why, why taking chances?" (male, 54, White, exclusive ENDS user, ENDS2).

Both dual and exclusive ENDS users said that smoking might make COVID-19 worse (e.g., "I've heard it's a bad combination. Respiratory disease and smoking just don't mix," male, 40, Black, dual user, ENDS1). However, while this risk was a motivator for quitting smoking for some dual users, they described themselves as lacking the willpower to actually quit. Dual and exclusive ENDS users had less discussion of quitting smoking or vaping compared to transitioning group described below; while some mentioned considering quitting, they did not pursue it because the COVID-19 pandemic has been a stressful time and vaping and smoking relieve stress. Notably, there was no discussion of COVID-19 encouraging participants to completely switch to ENDS.

**Transitioning smokers and/or ENDS users: "I tried to quit. And then my nerves get bad because of COVID and then you got to have one."**

This group comprised smokers and/or ENDS users who either recently quit (since February 2020) or were in the process of trying to quit using their products. While some of them might be quitting smoking cigarettes and switching to ENDS use, we did not find any mentions of motivation to switch to ENDS due to COVID-19; however, COVID-19 was a motivator to reduce use of both products.

The central theme for this group was struggle. Driven by concerns for their health, they were trying to stop using tobacco products, and while some were able to do so, many felt overwhelmed by

COVID-19-related stressors and continued to smoke or use ENDS. This group was highly aware that smokers are likely to have more severe symptoms of COVID-19. Multiple people reported hearing it on the news. For example: “I heard that the ones that smoke are more susceptible to get the hospital COVID, and recovery is crazy hard. You're more likely to end up in the ventilator” (female, 57, Black, Transitioning Smokers/ENDS Users group 1 [T1]). Others described arriving at the COVID-smoking link on their own, using logical reasoning: “the whole fact that this virus is like the flu, it infects your lungs, and I don't want to do anything that would compromise that and just make me more susceptible to having issues if I ever did get COVID” (male, 42, White, T1). There were no mentions of the protective effects of smoking or nicotine against COVID-19 in this group.

Participants were motivated to reduce their smoking or vaping because of fear of COVID-related health problems. For example: “Those two things together seem like it was a death wish in the beginning. You're stuck in the house and all you have is the news or television, and the television comes on and it's like, “Today 1,000 people,” and you're like, “Oh no!” You throw your cigarettes to the side.” (male, 47, Black, T1). One 22-year-old male (Black, T3) described how before COVID-19 he was “going through one, two pods a day,” but when COVID-19 started, “it just scared me. I didn't want to be in weak lungs or anything, and then get that [COVID-19] on top of it, whatever it was. So it was really just the fear factor of it that really motivated me to put it down.” He was able to reduce ENDS use to “a guilty pleasure every now and then [2-4 times a month], but it's not a dependency anymore.” Several other participants mentioned being able to reduce or quit their smoking or ENDS use completely. For some, the success was enabled by the reduced social opportunities, such as staying away from cigar bars, convenience stores or social events: “I'm more of a social smoker so when COVID hit, and the bars and the restaurants and things like that closed down, I stopped” (female, 47, Black, T1).

However, many were not successful and actually increased their tobacco consumption. For some participants, closed places with smoke-free restrictions (i.e., restaurants) led to spending more time in people's houses where everybody smoked: “Instead of a social gathering at a restaurant where you have to go outside and smoke and then come back inside. At friend's houses, you just smoke”

(male, 31, more than one race, T1). Others, while motivated to quit, returned to the habit of smoking and a few who had successfully quit before, started smoking again. For some of them, smoking was a means to deal with the stress and threat of COVID-19. Others' smoking habits were enabled by spending time with friends and family who smoke, boredom, and being at home where they "don't have to worry about the stigma around co-workers that comes with smoking" (male, 56, White, T2).

## Discussion

Our study examined knowledge, attitudes, experiences, and perceptions of smoking and ENDS as they relate to COVID-19. We evaluated three tobacco user groups who differed in their product use and quitting behaviors, and we found many similarities among the groups, but also pronounced differences. Across all groups, the same factors were consistently reported to drive increased smoking during the pandemic: COVID-19-related stress, boredom, isolation, loneliness, and spending more time at home. This is consistent with previous studies that found that stress and anxiety, isolation and loneliness, and boredom predicted increased smoking.<sup>8,20</sup> In addition, both transitioning smokers and/or ENDS users and current exclusive smokers mentioned smoking more because they were no longer facing the stigma that accompanies smoking at their workplace or in social situations. Differences among the groups were primarily in knowledge about the links between smoking and COVID-19, motivations to quit, and reactions to some of the stressors of COVID-19.

Transitioning smokers and/or ENDS users most often discussed the potential for COVID-19 to be more severe for smokers and for them; this was a strong motivation to quit or reduce their tobacco use. ENDS users discussed this too, but exclusive smokers were more likely to dismiss or not be aware of the effects of smoking on COVID-19 severity. Exclusive smokers seemed to be the least concerned about health effects of smoking and had little knowledge and some skepticism about smoking exacerbating the effects of COVID-19. This might be a teachable moment for communicating to smokers about the higher severity of COVID-19 for smokers in order to encourage quitting. Extensive research demonstrates that perceived risk of smoking is one of the driving factors motivating smoking cessation<sup>21,22</sup> and what distinguishes smokers without quitting intentions from

smokers planning to quit is their lack of appreciation for the risks of smoking.<sup>23</sup> Some studies have begun to examine messages to smokers about the combined harms of smoking and COVID-19,<sup>12</sup> and there is a need to better understand how to persuade smokers who are not currently planning to quit. Importantly, the lack of concern expressed by smokers may reflect their avoidance of negative information about smoking,<sup>24</sup> or network effects that decrease the likelihood of exposure to said information.<sup>25</sup> These factors should be considered when designing messaging campaigns to ensure that pro-health message content has the intended effect.

Some smokers mentioned seeing information that smoking is protective against COVID-19 and used this belief to justify continued smoking. This information came from several observational studies conducted in the early stage in the pandemic and summarized in several meta-analyses, which reported a negative relationship between smoking and getting infected with COVID-19.<sup>26</sup> These observational studies had multiple issues, that the authors of the meta-analyses<sup>27</sup> and others<sup>26,28,29</sup> have criticized. Some of these issues included the different ways of defining smoking status, inability to differentiate between smokers and non-smokers, and overrepresentation of healthcare workers (who are less likely to smoke but more likely to be exposed to the virus than the general population). At least one of the papers have been retracted<sup>30</sup> due to some of the authors' failure to disclose ties to tobacco industry, a potential conflict of interest.<sup>31</sup> However, the news and social media have disseminated this information and it seems to have resonated with some of the smokers in our study. While counteracting the misinformation is harder than spreading it,<sup>32</sup> public health agencies, primary healthcare providers, and others should continue sharing evidence-based information to smokers that smoking is extremely harmful on its own and increases the risk of severe COVID-19,<sup>11</sup> as well as motivating them to quit.

ENDS dual users were more motivated to quit smoking than current exclusive smokers; it is likely that at least some of them are using ENDS to help them quit smoking. Differences in risk perception between smokers and ENDS users may explain why some ENDS users feel more motivated to quit. Risk perception is one of the primary motivators for quitting risky behaviors, including smoking.<sup>22</sup> Compared to exclusive smokers, dual- or poly-users perceive higher risks of

smoking cigarettes<sup>33</sup> and smokers who try alternative tobacco products (like ENDS) have greater quitting intentions and are more likely to report quit attempts.<sup>34</sup> However, in our study, while some were motivated to quit smoking or using ENDS because of the pandemic, lack of willpower was perceived as a barrier. Accordingly, interventions aimed at increasing self-efficacy to stop using tobacco could be useful for individuals who are interested in quitting but lack the skills and/or confidence to do it. Research supports the benefits of promoting self-efficacy in the context of quit attempts.<sup>35</sup> Moreover, Marlatt and Gordon's relapse prevention model<sup>36</sup> emphasizes "skillpower" over willpower, such that individuals learn to change their behavior through effective coping strategies rather than just a matter of will. For example, learning to practice cognitive and behavioral skills to manage high-risk situations without smoking can enhance self-efficacy and cessation outcomes.

While a few current ENDS users reported using ENDS more since the start of the COVID-19 pandemic, dual users overwhelmingly preferred cigarettes. The ENDS and tobacco companies have been aggressively promoting their products with COVID-19-related marketing themes, including calls to 'stay at home and vape,' reassurances about healthfulness of ENDS, and reminders about ENDS calming and stress-relieving effects.<sup>37</sup> Yet these promotions either did not reach or did not resonate adequately with participants in this study. Across all groups, participants did not express motivation to completely switch to ENDS as a result of COVID-19, but other factors such as concerns about ENDS use as a result of news reports of deaths from EVALI also influenced these decisions.

Increased stress in the context of the pandemic was one of the most commonly mentioned reasons for increased smoking among participants across all groups. Even though some participants were concerned about the effects of smoking on COVID-19 complications and indicated a desire to quit, they still felt that this was not the right time to try because of high stress. Smokers commonly report smoking as a way to relax or manage stress, and this may be even more pronounced during the pandemic. Unfortunately, although smoking can be a short-term stress reliever, it only adds to long-term stress, and research shows that quitting smoking can reduce stress and anxiety.<sup>38</sup> Systems-level approaches are needed to address structural determinants of health (e.g., job and food insecurity, housing instability) that cause high levels of stress for many people in the U.S., particularly smokers

with low socioeconomic status. In addition, individual and community-based interventions could promote healthier coping strategies among smokers experiencing high stress. In high-stress contexts like COVID-19, interventions might even start by focusing on stress management rather than smoking cessation, particularly for smokers who are not motivated or not ready to quit. Perhaps addressing stress at the outset could help to build self-efficacy and motivation for quitting smoking. Mindfulness-based interventions may be well suited because of their benefits for reducing stress<sup>39</sup> and increasing self-efficacy for managing negative emotions without smoking.<sup>40</sup> This is consistent with literature on social support that shows how an emphasis on emotion-focused support leads to better psychological and behavioral outcomes than initial behavior-focused or advice-based communication.<sup>41,42</sup>

### **Regulatory implications**

People who are most negatively impacted by COVID-19 may experience the greatest pressure to smoke to cope with the pandemic-related stress. In addition to stress management interventions described above, a systems-level solution might be the FDA's plan to reduce nicotine in cigarettes and possibly other combusted tobacco products. Lowering nicotine in combusted tobacco products would make them less addictive and easier to quit and might enable smokers to give them up since cigarettes will no longer provide the same relief of cravings and stress. Events such as the COVID-19 outbreak, in which pulmonary harm is prominent, provide an opportunity to reemphasize the harmful effects of smoking on the lungs. A combination of targeted communication about the adverse effects of smoking on lung health and alternative means of stress relief along with the regulatory reduction of the stress-relieving effects of nicotine may help many recalcitrant smokers take the important step to completely quit. Studies show generally high levels of support for a reduced cigarette nicotine policy, including among daily smokers.<sup>43-45</sup> Based on our qualitative study conducted during the earlier months of COVID-19, smokers and dual users were open to this policy and dual users of ENDS and cigarettes indicated they would be likely to switch to ENDS completely if such a policy was implemented.<sup>46</sup>

## **Limitations**

This study is limited by a purposive sample from a single metropolitan area. The online platform might have restricted group interactions because of the lack of communicative cues (e.g., turn taking, eye contact). Alternatively, this platform might reduce perceived normative pressures that may lead to participants complying with opinion leaders. An online platform also has the potential for selection bias, as participants must have adequate internet connectivity and technology to participate. Yet, during the COVID-19 outbreak, the online platform was the only viable option for this study. The exclusive smokers were mostly female due to many no-shows among males, and this imbalance might have influenced the findings. The age distribution for the exclusive smokers and current ENDS users was different, reflecting to some extent the national prevalence of use where young adults have the highest rates of ENDS use and lowest rates of smoking.<sup>47</sup> It is possible that the findings between the groups might also be due to the age differences. Members of the target population did not have input in the development of the focus group guides so additional perspectives on these issues might have been missed.

## **Conclusion**

Smokers and ENDS users are affected by COVID-19 in different ways. While many aspects of the pandemic consistently lead to increased smoking due to stress and boredom, some people did find motivation to quit tobacco during this troubled time. Educational campaigns should capitalize on the teachable moment of COVID-19 to increase perceived risk of smoking among smokers currently not planning to quit and increase self-efficacy and provide resources to ENDS users who might be using ENDS as a smoking cessation aid. Smokers need to have access to more adaptive ways to deal with stress (such as mindfulness training) in lieu of smoking, which could increase their self-efficacy and ability to quit even in the midst of formidable stressors. In addition, the proposed policy to lower nicotine in combusted tobacco products might help smokers choose other means of coping with anxiety instead of cigarettes by reducing the stress-relieving properties of smoking that are particularly salient during the pandemic.

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**Table 1. Participant characteristics**

<b>Participant Characteristics</b>	<b>Exclusive Smokers<sup>d</sup> (n=16), n (%)</b>	<b>ENDS Users (n=22), n (%)</b>	<b>Transitioning Smokers/ENDS users (n=23), n (%)</b>	<b>Total (n=61), n (%)</b>
<b>Sex</b>				
Male	1 (6)	10 (45)	13 (57)	24 (39)
Female	15 (94)	12 (55)	10 (43)	37 (61)
<b>Age group</b>				
21-29	0 (0)	7 (32)	4 (17)	11 (18)
30-44	9 (56)	7 (32)	7 (30)	23 (38)
45-61	7 (44)	8 (36)	12 (52)	27 (44)
<b>Race</b>				
Black or African American	4 (25)	8 (36)	6 (26)	18 (29)
White	11 (69)	13 (59)	13 (57)	37 (61)
Other	1 (6)	1 (5)	4 (17)	6 (10)
Hispanic	0 (0)	2 (9)	2 (9)	4 (7)
<b>Education</b>				
Less than High School	1 (6)	0 (0)	0 (0)	1 (2)
High School Graduate	2 (13)	1 (5)	4 (17)	7 (11)
Some College or Technical School	5 (31)	7 (32)	7 (30)	19 (31)
College Graduate	4 (25)	11 (50)	9 (39)	24 (39)
Graduate Degree	4 (25)	3 (14)	3 (13)	10 (16)
<b>Household income</b>				
Under \$25k	1 (6)	0 (0)	2 (9)	3 (5)
\$25-34k	1 (6)	2 (9)	5 (22)	8 (13)
\$35-49k	6 (38)	3 (14)	1 (4)	10 (16)
\$50-74k	4 (25)	8 (36)	5 (22)	17 (28)
\$75-99k	3 (19)	6 (27)	3 (13)	12 (20)
\$100-149k	1 (6)	2 (9)	7 (30)	10 (16)
\$150k+	0 (0)	1 (5)	0 (0)	1 (2)
<b>Smoking</b>				
Every day	10 (63)	11 (50)	5 (22)	25 (41)
Some days	6 (37)	5 (23)	11 (48)	22 (36)
Not at all	0 (0)	6 (27)	7 (30)	13 (21)
<b>ENDS use</b>				
Every day	0 (0)	2 (9)	3 (13)	5 (8)
Some days	0 (0)	20 (91)	11 (48)	31 (51)
Not at all	16 (100)	0 (0)	9 (39)	25 (41)
<b>Smoking quit intentions<sup>a</sup></b>				
Never plan to quit	1 (6)	2 (13)	0 (0)	3 (6)
Plan to quit in the future <sup>b</sup>	15 (94)	13 (81)	3 (17)	31 (62)
Currently trying to quit	0 (0)	1 (6)	12 (66)	13 (26)
Recently quit (since Feb 2020)	0 (0)	0 (0)	3 (17)	3 (6)
<b>ENDS quit intentions<sup>c</sup></b>				
Never plan to quit	-	5 (23)	0 (0)	5 (12)

Plan to quit in the future <sup>b</sup>	-	17 (77)	1 (5)	18 (44)
Currently trying to quit	-	0 (0)	14 (74)	14 (34)
Recently quit (since Feb 2020)	-	0 (0)	4 (21)	4 (10)

**Notes:**

<sup>a</sup> Among participants who currently smoke.

<sup>b</sup> “Plan to quit in the future” combined answers “plan to quit in the future, but not in the next 12 months,” “plan to quit in the next 6 months,” and “plan to quit in the next month.”

<sup>c</sup> Among participants who currently use ENDS.

<sup>d</sup> “Exclusive smokers” means they were not currently using ENDS. They could use other products (e.g., smokeless tobacco, hookah, etc.)

The total percent might not add up to 100% due to rounding.

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