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### Authors

Sun, Christina J  
Doran, Kye M  
Sevelius, Jae M  
[et al.](#)

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# A Qualitative Examination of Tobacco Use and Smoking Cessation Among Gender Minority Adults

Christina J. Sun, PhD, MS<sup>1</sup>  · Kye M. Doran, MPH<sup>2</sup> · Jae M. Sevelius, PhD, MA<sup>3</sup> · Steffani R. Bailey, PhD<sup>4</sup>

<sup>1</sup>Division of Behavioral, Family, and Population Health, College of Nursing, University of Colorado Anschutz Medical Campus, Aurora, CO, USA

<sup>2</sup>Oregon Health and Science University-Portland State University School of Public Health, Portland, OR, USA

<sup>3</sup>Department of Psychiatry, Columbia University, New York, NY, USA

<sup>4</sup>Department of Family Medicine, Oregon Health and Science University, Portland, OR, USA

Christina J. Sun

[christina.sun@cuanschutz.edu](mailto:christina.sun@cuanschutz.edu)

## Abstract

**Background** Despite the elevated prevalence of smoking among gender minority adults, little is known about the factors that influence their tobacco use and cessation.

**Purpose** We identified and examined factors that influence tobacco use and cessation for gender minority adults, using a conceptual framework based on the Model of Gender Affirmation and Gender Minority Stress Model.

**Methods** Nineteen qualitative, semi-structured in-depth interviews were conducted with gender minority adults who smoke or no longer smoke and were recruited from the Portland, OR metropolitan area. Interviews were audio-recorded, professionally transcribed, and analyzed utilizing thematic analysis.

**Results** Four main themes were generated. Gender minority adults smoke to cope with general and gender minority-specific stressors. Smoking was described as a social behavior that was influenced and sustained by community and interpersonal relationships. Smoking cessation was motivated by health concerns (both general and gender minority-specific) and moderated by conducive life circumstances. Recommendations for tobacco cessation interventions highlighted the importance and role of social support. Participants expressed a strong desire for gender minority-specific tobacco cessation programs. There are unique and complex factors that contribute to the higher prevalence of smoking observed among gender minority adults.

**Conclusions** Tobacco cessation interventions are urgently needed for this population and should be tailored to address the unique factors that impact tobacco use and cessation among gender minority people to increase the likelihood of success.

## Lay Summary

Tobacco use is the leading cause of preventable death in the U.S. Smoking rates among gender minority people (people whose gender identity and/or gender expression do not align with the cultural expectations of their sex assigned at birth) are higher than in the general population. As a result, for developing smoking cessation interventions, it is important to understand what influences tobacco use and cessation among gender minority adults; however, little is known about these specific influencing factors. By conducting 19 interviews with gender minority adults who smoke or no longer smoke, we found gender minority adults smoke to cope with general and gender minority-specific stressors. In addition, smoking was described as a social behavior that was influenced and sustained by community and interpersonal relationships. Furthermore, smoking cessation was motivated by health concerns (both general and gender minority-specific) and moderated by conducive life circumstances. In sum, to encourage tobacco cessation, these findings suggest interventions across multiple contexts. Gender-affirming smoking cessation programs may prove more acceptable, satisfactory, and successful when (a) tailored to gender minority persons' needs, motivators, and experienced barriers and (b) aligned with significant and meaningful life changes, such as gender-affirming hormone therapy and surgery.

**Keywords** Smoking · Tobacco · Cessation · Gender minority · LGBT · Transgender

## Introduction

Tobacco use is the leading cause of preventable death in the United States (US), comprising about 20% of deaths every year [1]. Tobacco-related illness costs more than \$300 billion in direct medical care and lost productivity per year in the USA [1, 2]. Smoking also markedly increases risk for cardiovascular disease (CVD), accounting for about 1 in 5 CVD deaths per year [1, 3]. The 2020 U.S. Surgeon General's Report on Tobacco reported that about 14% of the general

U.S. adult population smoke although rates vary by demographic [4]. Studies have found that gender minority adults in the US have an elevated prevalence of smoking, with estimates ranging from 22 to 36% [5, 6]. Gender minority (GM) is a term that describes people whose gender identity and/or gender expression do not align with the cultural expectations of their sex assigned at birth [7]. Approximately 1 to 1.5 million American adults identify as GM [8, 9]. Given the health consequences of smoking [1, 10, 11], cessation interventions

that decrease the prevalence of smoking among GM populations could have considerable public health benefit.

Empirical data on factors that influence tobacco use and cessation among GM communities is limited, and what is known often comes from data on broader sexual and gender minority (SGM) samples in which GM adults often represent a small percentage [12–14]. Previous qualitative research has described a wide range of other factors that may explain heightened tobacco use among SGM people: these include factors that are intrapersonal (e.g., low self-efficacy for quitting), interpersonal (e.g., familial and peer influence), and environmental and structural (e.g., social norms, tobacco industry marketing) [13, 15–20]. In these studies, GM participants comprised a subset, ranging from 9 to 19% of the sample. Nonetheless, emerging research has shown there may be unique factors that influence GM tobacco use. In two separate focus group studies with GM adults who were either currently smoking or had stopped smoking, participants reported high stress levels and use of tobacco as a coping method from stressors related to transitioning, gender presentation, and multiple marginalized identities [13, 19]. In a study of 241 transgender women, researchers found a positive association between transgender-based discrimination and current smoking status as well as unsuccessful cessation attempts [21]. Other researchers found that participants who were able to legally change their gender marker on official documentation to match their gender identity reported lower rates of smoking [22, 23]. Additionally, longer duration delays between gender identity recognition and initiation of gender-affirming hormone therapy was associated with an increased risk of smoking [24].

Understanding the specific factors that influence tobacco use and cessation among GM adults is important for smoking cessation intervention development, as evidence suggests that cultural tailoring of smoking interventions may increase efficacy [25, 26]. Furthermore, the most recent Surgeon General's Report identified the critical importance of smoking cessation interventions specifically tailored to GM populations [4]. Others have also called for the need for GM-specific cessation interventions [23] as current tobacco cessation interventions largely aggregate SGMs [27–29]. Given the sparse data, further research—especially qualitative studies [30] on GM tobacco use and cessation—is needed to support development of GM-specific cessation interventions [21, 22, 31].

## Conceptual Framework

The research described in this article is theoretically informed by the Model of Gender Affirmation [32] and the Gender Minority Stress Model [33]. Gender affirmation is the process by which individuals receive recognition of and

feel validated and supported in their gender identity. The Model of Gender Affirmation includes the constructs of stigma, social oppression, psychological distress, access to gender affirmation, need for gender affirmation, and identity threat; it also maps out pathways whereby these constructs contribute to risk behaviors. The Gender Minority Stress Model posits that health outcomes experienced by GM populations are explained by the influence of distal stress factors (e.g., gender-related discrimination), proximal stress factors (e.g., internalized transphobia), and resilience factors (e.g., pride). These models complement one another by allowing researchers both to identify a variety of factors (e.g., chronic, unique, and socially based) and to explore pathways that influence health for GM persons. For example, from the Gender Minority Stress Model, distal stress factors (e.g., non-affirmation of gender identity) are associated with poorer health outcomes. This pathway between distal stress and health can be further explained by the Model of Gender Affirmation, which describes that when trans persons experience decreased access to gender affirmation, they experience identity threat and seek gender affirmation in risky contexts that increase their risk behaviors. By understanding the model constructs and how they relate to smoking, we can identify corresponding interventions.

Guided by the conceptual framework, this study sought to identify and examine factors that influence tobacco use and cessation for GM adults. We addressed the following research questions: (i) How do socially based stressors influence GM adults' tobacco use and cessation? (ii) What role does gender affirmation play in tobacco use and cessation among GM adults? We also sought to explore the implications of these factors in the development of a GM-specific smoking cessation intervention.

## Methods

### Participants and Procedures

Data were gathered through in-depth interviews with GM adults. We developed a semi-structured interview guide consisting of (a) questions and probes that served as a starting point for examining tobacco use and cessation and (b) suggestions for tobacco cessation interventions (see Table 1). The conceptual framework informed which factors might be salient to smoking among GM adults, how we explored the role of smoking in gender affirmation, and how we explored cessation as it related to gender affirmation and GM-specific factors. For example, both theoretical models identify gender-related discrimination as a key factor in GM health, so we asked participants to describe the impact (if any) gender-related discrimination had on their tobacco use and used

**Table 1** Interview guide topics and probes

Topic	Probes
Smoking history	How started, products
Impact of stigma or discrimination	Gender-related, sources
Quit attempts	Motivation, strategies, community connections, social support, friends/family, resources
Tobacco use and hormones	Knowledge, influence on cessation, interactions with health care provider, role of health care provider
Tobacco use and surgery	Knowledge, influence on cessation, interactions with surgeon, role of surgeon
Recommendations for smoking cessation program	Features, modality, framing

probes to examine the sources of discrimination. Additionally, the Model of Gender Affirmation asserts that unmet needs for gender affirmation predict risk behaviors. Gender affirmation can include social affirmation, medical affirmation, and legal affirmation, yet tobacco use is a contraindication for some medical gender affirmation options. We asked participants to describe their understanding of the effect of tobacco use on medical gender affirmation options (e.g., hormone treatment and surgery), ways their understanding may have influenced their cessation, and the role of health care providers in cessation. Our conceptual model also suggests that community connectedness could be protective and a point for intervention. Therefore, our interview guide included questions about their experiences with quit attempts and cessations broadly and the role of friends or important others in their cessation. Furthermore, we asked participants who had quit smoking to describe what strategies had been helpful.

Participants were recruited from Portland, OR and the surrounding metropolitan area. Recruitment was conducted through SGM-serving organizations that shared information about the study to their listservs and through online flyers, social media posts to SGM- or GM-focused community spaces, and participant referral. All participants were screened over the phone or through an online survey. Eligible participants were at least 18 years old, identified with a gender different from their sex assigned at birth, had smoked at least 100 cigarettes in their life, and owned a device that could access the internet. Recruitment was conducted from April through June 2020. A total of 28 potential participants inquired about the study. Of the 25 who completed the screener, three screened ineligible, and three screened eligible but did not complete the interview. Concurrently during recruitment, two members of the study team reviewed each interview and transcript. Once both study team members determined theoretical saturation (i.e., no new ideas or concepts emerged) had been reached, we ceased recruitment and data collection.

Before the interview, a research team member emailed the informed consent to potential participants and then reviewed the document with participants and answered any questions. Consenting participants provided a recorded, oral informed consent due to coronavirus disease 19 (COVID-19) public health measures that prevented in-person contact. Each interview lasted on average for 45 min (range = 31–75 min), was audio-recorded, and was conducted in English via video conference or phone by a designated member of the research team. This research team member identifies as gender diverse, had previously led a qualitative research study, completed graduate-level coursework in qualitative methods, and was further trained by the study PI (CJS). At the beginning of each interview, they briefly introduced themselves, their affiliations, and their connection to the research project. After the interview, the interviewer verbally asked participants closed-ended questions about their demographics (i.e., gender, race, education, income) and tobacco use. Participants could select all answers that were relevant. Participants who selected “something else fits better” in response to the gender identity question were asked to elaborate. Questions were modeled after the most recent U.S. Transgender Survey and Behavioral Risk Factor Surveillance System. Participants received \$25 via mobile payments (or in-person as requested by one participant). Study protocols were approved by the Portland State University Institutional Review Board.

## Data Analysis

Audio recordings were transcribed verbatim by a professional transcription company. Transcripts were verified by the research team for accuracy by comparing them to the audio recordings.

We conducted our thematic analysis [34] using a blended approach. First, two researchers (CJS, KMD) familiarized themselves with the data by independently reading three transcripts and generating a preliminary codebook of deductive and inductive codes at the semantic level by focusing on the explicit meaning of the data and to describe the data. Deductive codes were based on constructs from our conceptual framework that were incorporated into the interview guide while also allowing codes to emerge from the interview data (inductive). We defined deductive codes based on the theoretical models that formed our conceptual framework. Each coder independently applied the preliminary codebook to the remaining transcripts. To build consistency, analysts met to compare and discuss similarities and differences in the preliminary codebook and coded transcripts. We met after coding three to five transcripts to reconcile differences and refine the codebook, thereby ensuring that the coders had a similar understanding of how the codes were defined and a similar approach to coding and classifying the text so we had enough context to understand the quotes. Any inconsistencies were resolved via discussion. After coding transcripts, each team member reviewed the coded data, examined patterns of codes, and considered how codes with shared meaning could be combined. Themes describe the broader overarching patterns that we saw between, across, and within codes. Team members also independently created preliminary thematic maps to sort and conceptually group codes into potential themes and to explore how preliminary themes connected to one another. We discussed our thematic maps to refine the themes. Finally, we answered key questions developed by Braun and Clark [35] to review our themes for meaningfulness, coherence, and quality, and to ensure they were grounded in the data. We used Microsoft Word and Excel to manage, code, and analyze the data.

The study team members consisted of one person who identifies as a person of color and two people who identify as gender diverse. Their lived experiences and positionality influence how interviews were conducted and how findings were interpreted.

## Results

Of the 19 participants, approximately two-thirds (63%) reported currently smoking (see Table 2). Nearly all the participants ( $n = 17$ ) reported using an e-cigarette for nicotine consumption in their lifetime and four participants reported current use. Among the participants who reported currently smoking ( $n = 12$ ), three also reported current vape use. The majority were white (58%) and had earned at least a bachelor's degree. All participants were 20–49 years old.

The four themes that were generated from the interview data describe several key factors influencing tobacco use and cessation among GM adults. Recommendations for tobacco cessation interventions for GM adults also were identified. Each illustrative quote is annotated with the participants' participant number, gender identity, and smoking status (i.e., current, former).

**Table 2** Participant characteristics

Characteristic	n (%)
Sex assigned at birth	
Male	6 (31.6)
Female	13 (68.4)
Gender*	
Woman	4 (21.1)
Man	3 (15.8)
Transgender	9 (47.4)
Gender nonconforming/genderqueer	5 (26.3)
Nonbinary	7 (36.8)
Unsure	1 (5.3)
Something else (agender, transmasculine, graygender, genderfluid transmasculine)	4 (21.1)
Race**	
White	11 (57.8)
Multi-racial	2 (10.5)
American Indian or Alaska Native	1 (5.3)
Middle Eastern	1 (5.3)
Not reported	4 (21.1)
Education**	
Some high school	2 (10.5)
Some college	1 (5.3)
Associates degree	1 (5.3)
Bachelor's degree	8 (42.1)
Graduate degree	3 (15.8)
Not reported	4 (21.1)
Annual household income**	
<\$10,000	3 (15.8)
\$10,000–\$19,999	2 (10.5)
\$20,000–\$29,999	3 (15.8)
\$30,000–\$39,999	3 (15.8)
\$40,000–\$49,999	1 (5.3)
≥ \$50,000	3 (15.8)
Not reported	4 (21.1)
Smoking status***	
Current	12 (63.2)
Former	7 (36.8)
Time since last cigarette	
Within the past month	14 (73.7)
Within the past 3 months	2 (10.5)
Within the past 6 months	1 (5.3)
Within the past 5 years	2 (10.5)
Lifetime e-cigarette use	17 (89.4)
Current e-cigarette use	4 (23.5)
	Mean ± SD
Age	30 ± 6.5

\*% Exceed 100% as participants could select more than one option.

\*\*Race, education, and household income were not originally collected for all participants after completing the interview. We re-contacted those participants after the interview and four did not respond.

\*\*\*All participants reported smoking at least 100 cigarettes in their lifetime. Participants who reported smoking “every day” or “some days” were classified as current. Participants who reported they did not currently smoke were classified as former.

## Theme 1: Smoking to Cope With General and GM-Specific Stressors

Participants largely expressed using smoking as a coping mechanism for various stressors in their lives. Smoking provided temporary relief from pressure and a break from acute or chronic stressors. Smoking was used to de-stress and allowed participants to slow down. Participant 2 (P2; transgender man; current) stated:

So, any time that I smoke when I'm really stressed out, I feel like I can feel the stress like melting away or it feels more manageable at that time. It just gives me kind of a small window out of the day or a small window out of my life where I have a moment to think clear headed when I'm smoking.

Participants named a variety of stressors associated with increased smoking. A commonly identified stressor was work, especially in the service industry. Many participants used smoking to cope with irregular schedules and high demanding jobs. For example,

I was working a graveyard shift night audit job the last about six months that was really physically taxing...I realized that the nicotine was very much a crutch, it's helped me get through that. (P25; transgender, gender nonconforming/genderqueer, nonbinary; former).

Participants also acknowledged a wide range of other life stressors that influenced their smoking, including finances and interpersonal relationships. In addition to general life stressors, nearly every participant named marginalization of gender identity as a stressor that increased their smoking. P14 (gender nonconforming/genderqueer, nonbinary, graygender; current) explained,

We live challenging lives where we have to explain our existence and justify our existence and explain gender and biology and social norms to people on a regular basis. And that's exhausting.

Participants described marginalization as manifesting through interpersonal interactions, structural barriers, and social norms. Participants saw marginalization as particularly impactful in health care, housing, and employment settings. Participants noted how access to health care may be poor among GM populations, creating a barrier to needed gender-affirming care. Furthermore, when participants did access medical care, many noted stigmatizing, stress-inducing interactions with health care providers who had little or no knowledge about treating GM patients; in addition, some stressors were a result of non-affirming systems in place. For example, P6 (nonbinary trans woman; former) explained:

You have a medical record that has this name, but you don't go by that name. Also this gender marker is not the gender marker that you'd identify with ... so that it becomes like a slip up and causes distress because that distress is also why [I] turned to smoking.

Many participants noted disproportionate experiences of housing insecurity among GM people. While housing

insecurity was stressful on its own, a participant explained how GM people may face unique challenges living on the street due to anti-gender minority violence:

And then you have people in cars yelling slurs at you as you're walking by, et cetera. It gets stressful (P13; transgender woman; current).

Anti-gender minority violence and discrimination also occurred in the workplace, affecting employment opportunities and increasing work- and finance-related stress. One participant recalled a time they were fired due to their gender identity. Smoking provided participants a way to escape from gender identity-related work stress. For example,

If you're in a meeting at work and people are being really shitty about race or trans people or whatever, taking a smoke break is socially acceptable, whereas just walking out of the room for no reason isn't (P5; agender; former).

In sum, because of the generalized, elevated stress, trauma, and barriers faced by GM people, participants described a tacit understanding within GM communities that smoking is an acceptable, effective coping mechanism. P3 (transgender; former) shared,

I would validate the ways in which it [tobacco use] has helped so many people, and especially so many people who experience systemic oppression, and so just the mental emotional kind of 'support' or coping help that tobacco does have, because of our experiences.

While participants acknowledged the negative health effects of smoking, smoking was seen as a less harmful strategy to cope with depression than other substances such as opiates. Participants further justified smoking by comparing it to non-substance-use forms of self-harm: just as smoking was seen as less harmful than other drugs, it was also seen as less harmful than physically hurting oneself or even committing suicide. P16 (genderfluid transmasculine; current) stated, "It was like, oh, if I can have a cigarette instead of killing myself, that's probably better!" When the risks of smoking were compared to other more harmful coping strategies, cessation was seen as less of a priority.

## Theme 2: Smoking Initiation Influenced and Sustained by Community and Interpersonal Relationships

Participants described their smoking as initially encouraged by their relationships and then sustained through multiple avenues that make smoking a social behavior. Friends, significant others, and family influenced participants' smoking initiation. P7 (gender nonconforming/genderqueer, nonbinary; current) shared:

I think that when I did start smoking cigarettes, it was because I was around [cigarettes] more, socially, with friends, with ex-partners. Around the time that I started smoking more regularly, I was dating somebody who was a smoker...And I just started smoking because she was smoking, and it just stuck.

Most participants recounted these instances in a nonchalant manner, but a few described traumas associated with smoking

initiation, including being in abusive relationships or having a partner who pressured them to smoke. Several participants described their parents and other adult relatives as smokers and discussed their experiences growing up around smoking. Although parents and adult relatives modeled this behavior, participants who were raising children, wanted children in the future, or worked with children declared a determination not to smoke around children.

Smoking was described as a social activity. For example, P5 (agender, former) explained,

People will be like, 'I'm going out to smoke. You want to come with me?' And then you're kind of around it. And I guess folks don't want to smoke alone really, or they'll offer you a cigarette.

Participants perceived smoking as a way to maintain relationships, build camaraderie, and be part of a group—and this applied to all groups, not only GM communities. Participants said they smoked because they did not want to be left out or be the only one among a group of friends not smoking. For example,

If you have a group of friends that do smoke then that becomes part of your identity within a group of people. Like they expect you to go take cigarette breaks (P26; transgender; current).

In addition to smoking with friends, participants described how smoking facilitated introductions, assisted in building new relationships, and allowed for meeting and connecting with other GM adults, as described in the following:

There was a commonality between us, because we were smokers. So even if you just had started interacting by saying like, 'Hey, can I borrow your lighter?' It was an in to feel more comfortable in a social setting (P24; transgender man; current).

Often these interactions occurred at bars. For example,

Every time I went to the gay bar where everyone's hanging out, or I went to a space that I was safe at, there's a shit ton of people that smoke that encourage it, too (P8; non-binary; current).

Bars were seen as one of the few places for GM adults to socialize, as described by P12 (transmasculine; former):

The only thing to do at that age was to go to a club. I mean, there was nothing for youth or adults really. It was just bar scene...I think that type of discrimination and not having access to as many spaces and kind of pushing people into the bar scene, cigarettes definitely go with that.

Some participants reflected critically on bar culture and expressed the need to examine how that environment, which frequently includes tobacco advertisement, encourages smoking. P3 (transgender; former) related,

There's always somebody walking up to me [at a gay bar], asking me if I want a coupon for American Spirits, and it's like six packs for a dollar. It's ridiculous. How could you not, if you are a smoker?

Participants also advocated for spaces where they could socialize that do not center on drinking or smoking. Participants described a dearth of such spaces and felt that with increased availability of alternatives to bars, smoking would be less encouraged. As P15 (nonbinary; former) shared:

I wonder if there'd be a way to foster socializing, that, like avoids that kind of cigarette smoking part of the social activity. You know, I see that happening a lot in queer communities being like, how are we going to have spaces that are not that don't include drinking, for example, for people who need to just not have drinking around in the space all the time with them. So I feel like there's some potential for that with smoking too.

### Theme 3: Smoking Cessation Motivated by Health Concerns and Moderated by Conducive Life Circumstances

Many participants described physical well-being and health concerns not specific to GM health contributing to their desire to quit smoking. Participants perceived waning respiratory and cardiovascular performance as smoking sequelae; as a result, they could not easily perform or engage in certain enjoyable activities such as exercising, singing, and biking. For example,

But I was also coughing a lot, and having a lot of mucus in my throat, and having a hard time sleeping because of my coughing symptoms, and yeah. So I think that was kind of when I was thinking about it [quitting] (P5, agender; former).

Similarly, another participant shared,

...mostly health stuff. I'm also pretty athletic, so I feel that like my athletic performance would be better if I didn't vape (P1; nonbinary; former).

These general health concerns that motivated quitting were magnified for some participants when they discussed their smoking in relation to the COVID-19 pandemic, as exemplified by:

The biggest reason probably is this congestion in the lungs and just the fear of getting walking pneumonia. I used to be really prone to walking pneumonia and pneumonia...I just don't want to touch pneumonia or something like that, especially...during a time like COVID (P13; transgender woman; current).

In addition to general health concerns, participants described healing from gender-affirming surgery as a GM-specific health concern and large motivator for quitting. Participants who had, were interested in, or had a partner who was receiving gender-affirming surgery were well-versed in surgeons' smoking cessation prerequisites. For example, P17 (transgender woman, gender nonconforming/genderqueer; current) shared:

Yeah, that's one of the reasons why I quit the first time when my boyfriend had surgery. Because he couldn't have it obviously because it would mess with the scars and it

messes with healing and all that. So now, I would definitely quit doing anything, like smoking entirely if I was going to get surgery for sure. I would take care of myself there.

Participants who quit in preparation for surgery did not mention using any specific programs or nicotine replacement therapy. To manage discomfort from physical withdrawal, they focused on the larger purpose of quitting. One participant summarized their experience and strategy as:

Just being really firm with myself about just... I just flat-out can't [smoke], it [smoking] makes it [surgery] so much more dangerous, so I absolutely can't. And so psychologically it sucked, but I could do it because it was in pursuit of something that I wanted...I was miserable, but I just did it. It was just basically leaning into the misery and focusing on that at least it was for a really good goal (P16; genderfluid transmasculine; current).

Participants described tolerating the hardship of smoking cessation because it paled in comparison to the importance of gender-affirming surgery, as exemplified by:

I just had to concentrate on what I wanted my chest to look like, and how good I was going to feel because this was the most important thing in the world to me. The best day of my life was getting chest surgery. So, I just had to focus on the significance of chest surgery and how important it was for me for it to come out looking the best it possibly could, and how insignificant cigarettes were compared to that (P12; transmasculine; former).

Discussions about potential health concerns related to tobacco use in combination with gender-affirming hormone therapy were infrequent, mixed, and not particularly strong motivators for smoking cessation. For example, when asked what they had heard about the effect of smoking while using testosterone, P15 (nonbinary; former) responded, "You know, no one really gave me a lot of detail. I've heard vague stuff about like, it's probably worse." Similarly, in response to questions about the risks of tobacco use while using estrogen, another participant shared:

I think it's blood clots or something like that, that you have more of a risk for. I could be wrong, but I think that's it. You just have higher risk for that, maybe high risk for other stuff too. I'm not quite sure. I just know my doctor was like you shouldn't be smoking (P17; transgender woman, gender nonconforming/genderqueer; current).

Participants were more knowledgeable about the risks of smoking while using estrogen than while using testosterone. One participant relied on their academic education and own research and concluded:

Okay, so it wasn't necessarily anything that I heard per se, but just knowing that my testosterone medication, treatment would affect my red blood cells, it'd affect how thick my blood is, which affects cardiovascular health and brain health, and so potential stroke, heart attack, blood clot. Things of that nature (P10; transgender man, gender nonconforming/genderqueer; current).

Some participants described how their health care providers were actively limiting access to hormones by requiring smoking cessation, as exemplified by:

I had a doctor [location blinded] that threatened to take me off of my estrogen entirely if I didn't quit smoking... Yeah, I would say that the primary care physician that I have now actually I would say that lends the most support and changed my relationship to cigarettes in general...Just that sliver of representation and the promise from him that he wasn't going to fuck with my hormones just because I was struggling to quit, that was huge. I think once that support was there, that was one of the first major buildings blocks towards quitting. I didn't fear gatekeeping or my hormones being taken away from me (P6; nonbinary trans woman; former).

However, while health concerns were a motivation for tobacco cessation for some participants, this was not always the case. For example,

I'm at this point in my life where I really just don't give a damn. To be honest, I really don't think I'm going to get this surgery because it's taking so much time and I don't think I have that much time (P19; not sure; current).

A few participants grappled with whether tobacco cessation was a priority given their perceived imminent mortality (i.e., they had heard messaging about GM adults having shorter life expectancies). P1 (nonbinary; former) described,

I think that a lot of trans people I know, particularly transfem people are like, 'The life expectancy is shorter for me anyway, so I might as well live it up, go hard and do what I need to do in order to survive today'.

Outside of health-specific motivators, in general, cessation was most successful when participants experienced a change in their life circumstances. Two major changes described were related to the work environment and COVID-19 pandemic. For example, P25 (transgender, gender nonconforming/genderqueer, nonbinary; former) shared the effect of a change from working the night shift of a stressful job to doing an office job during typical business hours:

And I found that just having a very substantial change in daily routine was sort of the last nail in the coffin and that just really allowed me to just drop it [smoking] right there.

Changes in the work environment also included no longer being around close colleagues who smoked. As for COVID-19, the pandemic was viewed as an opportunity to make changes. The public health measures to reduce transmission of COVID-19 also resulted in decreases in socializing with other people who smoke, which helped participants quit smoking.

#### Theme 4: Social Support Desired for Cessation

Nearly all participants expressed a desire for social support to be incorporated in cessation interventions. While existing social support for cessation was described as limited, some participants who had quit talked about how people in their

life had helped in their cessation. P8 (non-binary; current) shared, "I have been just spending a lot of time with my wife, because she won't smoke and she won't let me smoke". Other participants theorized that social support would be an important aiding factor in an online smoking cessation intervention by decreasing isolation, increasing connection to other GM people, and increasing positive messages about smoking cessation. Participants were interested in a variety of different supports, including sharing tips and strategies, being able to vent about difficulties, celebrating successes, and providing encouragement to one another.

Participants wanted to exchange support through different mechanisms. Some participants wanted an intervention to include group discussion while others preferred one-on-one messaging. Participants thought group discussion would allow them to meet other GM people, build a network of support that might not be otherwise accessible, and provide a space for community building. P25 (transgender, gender nonconforming/genderqueer, nonbinary; former) stated,

I don't really have a lot of other trans people in my life, but, but I think having an opportunity to connect with other trans people with similar experiences would be very appealing and helpful in yeah cessation.

However, some participants were skeptical about how useful a chat function would be without guidance. Participants suggested prompts to encourage initial conversations, such as

like, 'Talk about this thing', even if it's really loosely defined...it's useful to have some kind of direction, and also, just some regularity with checking in with each other (P7; gender nonconforming/genderqueer, nonbinary; current).

For one-on-one support, participants described how individualized support could be more tailored to their needs and how they might feel more comfortable sharing with a specific person.

Accountability was often discussed in conjunction with support. Many participants described the concept of an "accountability buddy," (P16, genderfluid transmasculine; current) a person with whom to discuss their cessation progress and

somebody that checks in on you and says, 'Hey, how was your day? How are you feeling?', ask, 'How is quitting going for you? Is there anything you need from me? Is there anything you want to talk about?' (P24; transgender man; current).

Other participants described desired program features such as reminders or logs to increase accountability. Participants thought accountability provides an external source of monitoring in which participants might feel more responsible or encouraged to continue in their cessation efforts. However, some participants also stressed the importance of accountability not being used as another form of shame.

In all discussions of social support, positivity, and a judgment-free space was seen as a critical counter-narrative to negative, stigmatizing messages participants currently receive about smoking. P13 (transgender woman; current) described their ideal message:



Trans people are beautiful and ethereal and expressing that, and that their time is more valuable than smoke a cigarette. I think that's a positive message.

Participants emphasized the importance of social support coming from others of shared GM identity because that would decrease stress, increase sense of safety, and allow for more authentic participation, all of which ultimately would increase success in cessation. Understanding and affirming gender identity was seen as important to buffer the stress from transphobia and structural erasure of this identity. This specific support was contrasted with participants' current contexts of stress and marginalization where many felt unsupported or unaffirmed as a GM person (see Theme 1). P14 (gender nonconforming/genderqueer, nonbinary; current) further described:

I feel like when I'm just kind of moving around in the world with cis folks that I kind of have my guard up without realizing it and kind of bracing myself for being misgendered or misnamed. Um, and so just with trans folks, I kind of can like breathe a little bit easier and kind of just relax a little bit more...I can be myself more authentically...and participate more, um, in a way that just kind of feels, feels safer emotionally.

Participants felt that other GM persons could better understand the specific stresses of marginalization and how they may contribute to smoking. For example,

Maybe having experience with the gatekeeping...that happens between doctors and trans people with smoking and awareness around those community-specific things (P6; nonbinary trans woman; former).

Common understanding would allow participants to develop deeper connections as they would not have to explain the context in which they live.

Participants also expressed interest in interacting with other people who were quitting or had successfully quit. Participants said that talking to someone who had successfully quit could improve self-efficacy through role modeling. As P12 (transmasculine; former) stated, "You want to see other people who've done it and are happy and grateful".

Participants also expressed concerns about the lack of culturally tailored cessation programs. Participants noted current cessation programs may not account for specific reasons why GM adults may smoke tobacco, including the structural barriers and social norms that participants identified as stressors (see the Theme 1 section). For example, "The reasons that... trans people smoke are perhaps a bit more unique than the general population" (P26; transgender; current). Some participants recounted negative experiences with non-GM-specific cessation support groups. Two common barriers were binary gender options when creating online profiles and gender-specific support groups in which participants did not feel welcomed or understood by other participants. When participants were not affirmed either by the program itself or the other program participants, they were less likely to engage, follow through, or be successful in their attempt to quit. P7 (gender nonconforming/genderqueer, nonbinary; current) described their experience with an online tobacco cessation support group:

They asked me, 'What's your gender, male or female?' And then the point was to put you into little support groups... with other people who were your same gender...And it was really awkward, and I didn't feel like I was actually connecting with the other people who were doing it.

## Discussion

This study provides an in-depth understanding of experiences GM adults in this sample have with tobacco use and cessation. From this sample, four themes provide insights into tobacco use and cessation among GM adults. First, GM adults smoked to cope with general and GM-specific stressors. Smoking was described as a social behavior, introduced, influenced, and sustained by community, and interpersonal relationships. Health concerns were the primary motivation for smoking cessation, and cessation success was reinforced by conducive life circumstances. Finally, participants described social support from GM people as bolstering their smoking cessation efforts. This study identified factors that are salient to increasing our understanding of tobacco use and cessation among GM adults, the influence of gender affirmation on tobacco use and cessation, theory-based intervention recommendations, and participant-suggested intervention recommendations. These findings confirm the importance of understanding GM-specific factors that impact smoking and cessation and add to the limited research about the needs and experiences of GM people.

Smoking as a coping mechanism for stress and the connection between structural barriers and SGM-specific discrimination to increased smoking are consistent with previous findings [36, 37]. The most salient stressors stemmed from marginalization of gender identity through interpersonal interactions, health care, housing, and employment. As described by the participants in this sample, interactions with health care providers can be non-affirming and cause a unique form of social stress that may harm some GM adults. Future research should determine best practices for gender-affirming smoking cessation counseling and clinical care.

Societal marginalization also seems to have yielded only a few settings where GM adults felt safe. Other studies have described how bars and bar culture contribute to smoking among SGM people [16, 38–41]; in this study, too, bars were described as one of the few locations GM adults could socialize with, connect with, and meet other GM adults. Therefore, smoking cessation for GM adults may mean eliminating a mechanism that fosters belongingness. Cessation could be quite difficult given the current context where there are often few alternatives to bars as a place to build and maintain relationships with other GM persons.

Another contribution of this study is the identification and role of GM-specific health motivators for tobacco cessation, specifically healing well from gender-affirming surgery and (to a lesser degree) minimizing the negative interactions between hormones and tobacco. Not all GM people seek hormones or surgeries for gender affirmation, but for those who do, focusing on the positive outcomes of surgery was a significant means of overcoming nicotine addiction. While previous research about the general population has identified health as a reason to quit smoking [42–44], our study highlights GM-specific health concerns. Concerns about the impacts of tobacco on hormones and the interaction between hormones

and tobacco were minimally discussed, despite the potential of GM people experiencing higher cardiovascular risk from smoking due to interactions with hormones [45]. This could be due to unclear guidelines, lack of conclusive research [46–48], or providers not discussing potential increased risks for negative side effects.

Most of these findings suggest that the theories in our conceptual model are useful in explaining smoking among GM persons. The interview data include constructs and pathways posited by the Model of Gender Affirmation and Gender Minority Stress Model. Participants described their experiences with smoking within the context of distal stress factors and social oppression. They also described the psychological distress and proximal stress factors as a result of their experiences with oppression, stigma, and distal stress factors. However, our data suggest some opportunities to expand these models when examining smoking and cessation. We found that smoking was a way to foster connections with members of the community who shared their gender identity (i.e., community connectedness; a resilience factor as per the Gender Minority Stress Model). This finding seems to depart from our conceptual framework, which describes resilience factors as protective against negative health outcomes. The addition of theoretical literature on smoking cessation may deepen our understanding.

There are several limitations and considerations to consider when interpreting these findings. First, our interviews occurred during the COVID-19 pandemic. The context of the pandemic, including greater experience and familiarity with telemedicine or communication with their social network via videoconferencing, may have increased the acceptability of a mobile health smoking cessation program and potential intervention features. Participants also described reduced socialization resulting from public health measures, and that may have encouraged participants to quit smoking. Interestingly, despite COVID-19 being a respiratory virus, only one participant raised concerns about tobacco use as a risk factor. In response to the pandemic, our recruitment occurred completely online or via participant referral, so we may have missed perspectives of potential participants who do not use social media or are not as connected to other GM adults or SGM- or GM-serving organizations. The pandemic has had a disparate impact on GM communities. Several of our participants disclosed being recently unemployed, suggesting we may have interviewed participants who were more socially vulnerable. The transferability of these findings to GM people of color and older GM adults may be limited; there may be substantively different lived experiences to consider. Additional research is needed to address these limitations and further expand on the current study's findings. However, a strength of our research is that findings are based on interviews with people who no longer smoked and people who currently smoked, nearly all of whom had tried quitting smoking. This strategy allowed us to understand multiple perspectives: from former smokers, we learned what strategies were helpful; by examining quit attempts of current smokers, we learned of additional opportunities to intervene.

To encourage tobacco cessation, these findings suggest interventions across multiple contexts. A tobacco cessation program tailored for GM populations could offer activities to help participants de-stress or build social support and community to counteract stressors. As gender affirmation can be an important source of social support [32], interventions

that build social connectedness with other GM adults may support smoking cessation. Research with SGM youth and young adults has shown a desire to incorporate peer support within smoking cessation interventions [49, 50]. Increasing access to and availability of places where GM communities can socialize—but that do not encourage tobacco use and center on drinking alcohol, which is often accompanied by smoking—could serve as an environmental intervention and aligns with priorities identified by other SGM adults [51]. We identified a missed opportunity for health care providers to support their patients' smoking cessation by prescribing nicotine replacement therapy or other medications. Another opportunity is for providers to refer patients to services within health care systems such as behavioral counseling, as few participants described providers or surgeons discussing or supporting cessation. Nicotine replacement therapy increases the likelihood of successful cessation [52], yet similar to other minority populations [53–55], our sample reported no use of such medication. Care should be taken when using a future-oriented perspective as that may not resonate with all participants. Furthermore, providers should be careful not to withhold life-saving medication as a motivator for smoking cessation. Providers may need more education about the role of hormones and the most appropriate application of evidence-based cessation assistance for GM persons. Perhaps health systems interventions are needed to support providers having affirming conversations with patients about the importance of quitting; the interventions should emphasize value and respect for participants' autonomy and decision-making.

Regardless of the type of intervention, program content should counteract negative societal messages about gender identity by using strength-based narratives (as opposed to a deficit lens [56–58]), enhancing gender affirmation, and highlighting the value of GM peoples' lives. From the interviews, we identified many strengths that could enhance smoking cessation efforts. For example, some participants described not wanting to smoke around children, which reveals the desire among GM adults to exercise agency and contribute to future generations. Smoking cessation programs are not typically designed to address gender affirmation needs, and as our research found, this lack of tailoring results in low engagement. Gender-affirming smoking cessation programs may prove more acceptable, satisfactory, and successful when (a) tailored to GM persons' needs, motivators, and experienced barriers and (b) aligned with significant and meaningful life changes, such as gender-affirming hormone therapy and surgery.

## Conclusion

Participants expressed a strong desire for GM-specific tobacco cessation programs. Interventions designed for and in partnership with GM populations and that are gender-affirming can address the unique factors that impact GM tobacco use and tobacco cessation, increasing the likelihood of success.

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## Compliance with Ethical Standards

**Authors' Statement of Conflict of Interest and Adherence to Ethical Standards** Authors Christina J. Sun, Kye M. Doran, Jae M. Sevelius, Steffani R. Bailey declare that they have no conflict of interest. All procedures, including the informed consent process, were conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

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**Transparency Statements:** (1) This study was not formally registered. (2) The analysis plan was not formally pre-registered. (3) De-identified data from this study are not available in a public archive. De-identified data from this study will be made available (as allowable according to institutional IRB standards) by emailing the corresponding author. (4) There is not analytic code associated with this study. (5) Materials used to conduct the study are not publically available.

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