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PATHWAYS OF NICOTINE PRODUCT USE: A QUALITATIVE STUDY OF YOUTH AND YOUNG ADULTS IN CALIFORNIA

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PATHWAYS OF NICOTINE PRODUCT USE: A QUALITATIVE STUDY OF YOUTH AND YOUNG ADULTS IN CALIFORNIA

ABSTRACT

Introduction. Existing research on youth's adoption of alternative nicotine delivery systems (ANDS) has focused on identifying pathways of nicotine product use, specifically examining whether vaping encourages progression to smoking. Few studies have considered other pathways of initiation. Qualitative studies suggest that meanings of vaping vary significantly, suggestive of the need for a more nuanced understanding of the role of vaping for youth with different pathways into vaping and smoking.

Methods. We conducted in-depth qualitative interviews with 49 Californian youth between 15-25 years old who reported ever vaping nicotine to gain a deeper understanding of their initiation pathways of vaping and smoking, paying special attention to youth's experiences and reasons for ANDS initiation and use. Categorizing participants into initiation pathways by self-reported use and age of initiation of ANDS and cigarettes, we then compared the meaning and role of vaping across 3 distinct pathways of use: (1) smoking to vaping, (2) vaping to smoking, and (3) vaping only.

Results. The most common pathway reported was smoking to vaping (74%), eight participants began vaping prior to smoking, and five participants reported only vaping but never smoking. Analysis of participants' narratives, emphasized that youth in our study, regardless of initiation pathway, were generally aware of the health consequences of smoking and negotiated their use of nicotine products considering relative risks.

Conclusion. Findings from this study suggest that ANDS serves as a transitional tool for youth who are keenly aware of the health consequences of smoking, thus challenging conventional discourses about ANDS as a threat to youth's health.

IMPLICATIONS

This qualitative study queries concerns about the potential of alternative nicotine delivery systems (ANDS) to serve as a gateway into cigarette smoking for youth and young adults. Findings suggest that most of the youth participants discussed and considered relative risks in their pathways of initiation, highlighting the need to acknowledge harm reduction in constructing public health messaging and policies for smoking cessation.

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INTRODUCTION

Some researchers and advocates have raised concerns that alternative nicotine delivery systems (ANDS) act as a gateway into cigarette smoking and promote nicotine dependency for youth.^{1,2} However, other researchers argue that ANDS are important for harm minimization because they may replace higher risk combustible tobacco products, ultimately supporting goals related to the cigarette smoking endgame.³⁻⁵ ⁶ Despite these debates, we still know little about how youth make sense of their transitions between ANDS and cigarettes and justify their unique initiation pathways of use.

Existing research on pathways of nicotine and tobacco (NT) use has primarily focused on examining whether youth initiation of vaping encourages progression to smoking initiation.⁷ A few studies suggest that compared to never vapers, youth who use ANDS are likely to progress to smoking and that adolescent smokers who then initiate vaping are likely to adopt dual use practices of smoking and vaping.^{1,7} For example, cross sectional studies have found that among never smoking adolescents, ever use of e-cigarettes was associated with increased susceptibility to initiate smoking,⁸⁻¹⁰ and that e-cigarette use was not associated with intentions to quit smoking.^{11,12} Recent longitudinal studies suggest that youth e-cigarette use was associated with future cigarette initiation and current cigarette use,^{13,14} suggesting that e-cigarette use is a risk factor for cigarette smoking.⁷ This body of evidence, however, has been criticized for not considering the potential counterfactual that, for reasons related to experimentation, the same youth who initiated e-cigarettes first may have been likely to try cigarettes had ANDS been unavailable,⁵ and that most e-cigarette-only youth vape infrequently and are not necessarily using devices containing nicotine.¹⁵

Few studies consider other pathways, most notably from cigarettes to ANDS, which is arguably a pathway of harm reduction should smoking be eventually reduced or stopped.³ Findings from a growing body of qualitative research suggest that the positioning of ANDS as a “gateway” into smoking cigarettes may not align with the reasons why some youth report vaping.^{16,18-28} For example, a study of 16 young adult vapers in New Zealand found that participants, who smoked and vaped, used ANDS to either recreate or replace rituals of smoking, and non-smoking vapers tended to dislike smoking and vaped to foster social connectedness.²² Another study of disadvantaged young adult smokers and ex-smokers in Scotland found that although most participants preferred smoking, the few who used e-cigarettes were motivated by health concerns and desires to quit smoking.²³ Qualitative studies have also highlighted that vapers are not a homogenous group and that meanings of vaping vary across users,^{16,17,24,26,27} which suggests a need

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for a more nuanced understanding of the role of vaping for youth with different NT initiation pathways, particularly in light of 'gateway' concerns that early ANDS initiation leads to cigarette smoking initiation.

In California, the overall prevalence of youth cigarette smoking continues to decline, even with the emergence of ANDS.²⁹ We conducted in-depth qualitative interviews with 49 Californian youth between the ages of 15-25, who reported ever vaping nicotine, to consider whether and how the meanings and role of vaping varies by youth's pathways of initiation of vaping and smoking. By understanding how youth, with various NT use pathways, make sense of their vaping practices, we can more fully understand youth's motivations for vaping and identify innovative and responsive prevention, treatment, and policy efforts that may be better tailored to youth's unique needs and experiences.

METHODS

This study is based on narrative data from in-depth interviews with 49 youth. Volunteers were recruited using street-level outreach methods (e.g. posting fliers where young people congregate or approaching volunteers on the street),³⁰ through Facebook advertising, and by referral to participate in a 2-hour open-ended interview designed to collect descriptive data on the participant's background and everyday life; their NT use pathways and current use practices, the socio-cultural meanings of e-cigarettes and cigarettes in youths' lives; and perceptions of NT control policies. In person or by phone, participants were screened for eligibility which included being between 15-25 years old, reporting ever vaping nicotine, and living in the San Francisco Bay area. Preceding the interview, a questionnaire was administered that included basic demographics and questions about NT use, including age of initiation and past 30-day use. We obtained parental consent from eligible volunteers under the age of 18. All participants provided consent or assent to participate and received a \$50 honorarium. Study procedures were approved by our Institutional Review Board.

Interviews were digitally recorded, professionally transcribed, and integrated with ATLAS.ti, a qualitative data management software program. The first stage of analysis included coding all transcripts to isolate narratives by topic into manageable analytical segments.³¹ The codelist was developed by the authors, informed by existing literature and preliminary analysis of interviews. Codes were extensive and included perceptions of smoking and vaping, initiation stories, social motivations of use, pathways of use, cessation motivation, and future intentions of use.

Using questionnaire data on age of initiation of both vaping and smoking, the lead author categorized each participant according to 3 pathways: (1) vaping-to-smoking, (2) smoking-to-vaping, and (3) vaping only, and then grouped interview transcripts by pathways to structure analysis of the coded data and to

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compare whether participants' perceived role of vaping varied by pathway of use. The lead and second author then conducted a second phase of thematic analysis to identify emergent themes from the narrative data.^{31,32} We also examined divergent and conflicting discourses within interviews to reduce threats to validity by challenging our a priori assumptions, including the use of ANDS for cessation.³³ Quotations from participants introduced below are identified by participant-selected pseudonyms to maintain anonymity.

Sample

The average age of participants was 21 years old. Forty-nine percent of participants identified as women, 30.6% identified their sexuality as something other than heterosexual, and only 19 participants (38%) reported their race/ethnicity to be White. Considering health care access as an indicator of socioeconomic status, 37% of the 38 participants who were willing to share or knew their health insurance status reported receiving government-assisted healthcare for low-income individuals or were uninsured. Finally, 20% of the sample (N=10) reported their mental health to be fair or poor. This descriptive detail is valuable for illustrating the diversity of participants, particularly in terms of race/ethnicity and highlighting the multiple disadvantages reported by participants.

RESULTS

The most common pathway reported among participants was smoking-to-vaping, with 36 of 49 participants (74%) characterized into this pathway. Eight participants began vaping prior to smoking (16%) and five participants reported only vaping but never smoking (10%). Though youth held different attitudes about vaping—many were indifferent, others regarded them as “lame”, and a few considered vaping “cool”—nevertheless, participants' narratives about their initiation pathways revealed important insights into the role that vaping played in their lives. Overall, analysis illustrated that regardless of pathway, youth considered vaping to be a valuable alternative to smoking, often chosen in consideration of relative risk. The ways in which participants across pathways described vaping as an alternative varied, yet their discussions collectively highlighted widespread acknowledgement of the risks associated with smoking and how they attempted to minimize those risks by vaping. (see Table 1)

Smoking to Vaping (n=36)

The smoking-to-vaping pathway includes participants who initiated smoking first and then began vaping as an alternative to smoking. Although participants in this pathway had varying current nicotine use practices (e.g., 60% reported past 30-day dual use, 28% reported only smoking, 11% reported only

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vaping, and 3% reported no longer smoking or vaping), they expressed concerns about the consequences of smoking and generally considered vaping as a way to reduce or quit smoking.

“Just stop smoking cigarettes, that’s what I’m using it [vapes] to do. It’s a lot healthier”

E, 21-year-old woman

“I literally vape, because I don’t want to smoke cigarettes. I don’t do it to look cool...I was...like, oh my God, people are going to think I’m an idiot for doing it. But it really does help.”

L, 21-year-old woman

“I have tried quitting smoking, but sometimes the stress is just too overwhelming... [but] I wanted to quit...because I think [smoking] was damaging my body...in the long run, it wouldn’t be good for my health... vaping helped me quit smoking...where I don’t smoke or I don’t go buy a pack for myself nowadays...So vaping has helped me a lot.

Panda, 18-year-old woman

As Panda alludes to above, many participants expressed an intention to quit smoking but noted that they had failed quitting “cold turkey,” discussing both their dependency to nicotine and the value of nicotine for coping with stress in their lives.

“[Vaping] makes me feel less bad about ...smoking ... and it does help...for relaxation ... if I’m stressed. ‘Cause it has the...same effect to when you’re smoking, but not as bad...It just feels like I am smoking, but I’m not smoking a cigarette”

Brian, 23-year-old woman

“For me, the reason that I’ve kept smoking so long is because I have really bad anxiety and depression. ...to have that little thing that you can hold in your mouth and kind of pay attention to ... you can still have that, but not have to deal with the actual cigarette consequences.”

January, 18-year-old woman

Other participants in the smoking-to-vaping pathway also emphasized how vaping not only reduced the harms associated with smoking but could also help to maintain the sociability that made cigarettes attractive. In many cases, goals of smoking reduction/cessation were instigated or reinforced by friends who encouraged participants to adopt vaping as a healthier behavior.

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“Some of [my friends] that vape... influenced me to get off cigarettes...And vaping...is kind of a social gathering. We’re all vaping. We’re just all talking...in a sense of we’re all smoking cigarettes, but it’s a ... better alternative. And...a way of conversing.”

Keith, 22-year-old man

As mentioned above, vaping had not entirely replaced smoking for participants. Yet many of these participants emphasized vaping as an important tool in the process of transitioning away from smoking and ultimately quitting smoking.

“I tried [quitting smoking] cold turkey before. I couldn’t do it. It was just way too hard. I tried weaning myself off and that didn’t work either...So...I tried the...vapes. And I was well, this isn’t that bad...I like this...of course, I still like cigarettes once in a while. But it’s just something about the vape that I keep coming back to.”

Z, 20-year-old woman

A few participants discussed being unable to embrace vaping so easily in part due to a perception that vaping was “pointless” or difficulties in escaping the allure of smoking.³⁰

“I had been smoking cigarettes for probably a year and a half before vaping really started hitting the scene. And I just didn’t even...pay attention to it... And then tried it myself ...[Vaping] was just like smoking air to me...so I would just do it for smoke tricks and stuff like that...I probably would try to smoke the vape first. And then if it didn’t do it for me, then I would swipe a cigarette...I was trying to use vape as a means of quitting [smoking].”

Escobar, 21-year-old man

“When I had been smoking cigarettes a lot more regularly... if something had been bugging me, that would easily go away... it just was a very quick easy thing. And...there was some sort of weirdness I was feeling with the electronic cigarette and the disconnectedness of it being this electronic device. ...it almost felt...phony. And...I was kind of... realizing I don’t care for this.”

Isabel, 25-year-old woman

Vaping to Smoking (n=8)

The vaping-to-smoking pathway is characterized as having vaped for any length of time before experimenting with smoking or developing regular smoking habits. Four participants in this pathway reported past 30-day dual use, three reported only vaping in the past 30 days, and one reported only

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smoking the past 30 days. Generally, narratives from these participants resembled the narratives of participants in the smoking-to-vaping pathway where vaping was considered a less harmful alternative to smoking. Participants also expressed widespread awareness about the harms associated with smoking, with some participants describing extremely strong anti-smoking sentiment, referring to smoking as “gross” or “poison” and something to be avoided.

“It’s poison. It’s deadly. I mean a cigarette...it will deteriorate your body and give you lung cancer. ...But like me, I’ve cut back a lot. And I’m hoping that me vaping more will eliminate me from smoking cigarettes completely.”

Nicole, 20-year-old woman

“[Smoking] ... makes me feel kind of dirty and gross. And I...feel ashamed in a way of doing it. I just feel like, ... how did I end up smoking cigarettes? Like, what am I doing? I should not be doing this, ... I don’t like it as much [as vaping].”

John, 16-year-old young man

“I think smoking cigarettes is a stupid choice. I don’t think there’s anyone in our country that doesn’t know how bad they are. And if you make that decision, ...I hope that the truth gets to you.”

Sue, 22-year-old woman

Narratives from some participants in this pathway described smoking following vaping as temporary, in part due to the ways in which they perceived smoking to be a threat to health.

“I think it’s disgusting...there’s so many negative effects and so little positive, that it’s just gross. It smells bad, makes you look bad. It’s bad for your lungs...I smoked [cigarettes] a little bit, just when I got to college, but it was short lived because I realized it’s disgusting and I don’t want to do that.”

Kevin, 21-year-old man

Others did not see smoking as experimentation but instead as a temporary way to get a nicotine hit when they could not access their vaping device, either due to cost or to the law prohibiting them from purchasing nicotine solution. When asked why he smoked cigarettes in the past, he said:

“I...sold my vape to my friend, because I...needed money...I was feening for the nicotine...I just saw that pack of cigarettes...and I...took it and smoked it...turned into a little bit of an addiction

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for like a month and a half or so...And recently, just because it was so hard to get juice again because of the 21 and older law, I had one of my friends buy me a pack of cigarettes, because I couldn't have nicotine."

Jeff, 18-year-old man

Notably, all participants in this pathway had either initiated cannabis use prior to tobacco use (n=4) or had initiated cannabis and tobacco at the same time (n=3), raising questions about the centrality of cannabis in the lives of these youth more generally. Unfortunately, it was beyond the scope of this study to conduct an in-depth examination of youths' cannabis use.

Vaping Only (n=5)

This pathway characterizes youth whose only experience with nicotine was through vaping. Of the five categorized into this pathway, only one was vaping at the time of the interview and the others reported no past 30-day vaping. Foxy was a 22-year-old, queer-identifying woman who described herself as both a risk taker and harm reductionist. She discussed her disinterest in shouldering any potential future burden of smoking, but vaping, which she feels is far less harmful, plays an important role in her life:

"[Vaping] can be a way to unwind or to focus...I feel like it can...even me out...I have issues with anxiety...sometimes if I'm dealing with sensory overload...it really helps...if I'm feeling really tired, it'll bring me back up to a certain level. If I'm feeling really anxious and scattered, it'll bring me back down to a certain level."

Though the other participants in this pathway no longer saw a role for vaping in their lives, they similarly rejected smoking due to health concerns and had no intention of smoking in the future. Vaping in the past, on the other hand, had previously served a social function in their lives. These participants had typically vaped without nicotine though not exclusively.

"When I first got [my vape], I did show it to [him]...and we started vaping...a lot really. But then, after we broke off, he and I, it was just me solo. And then, I'd vape for a little bit. And it wasn't as crazy as it used to be...Probably about six months ago was about the last time I really vaped. Like I said, I just kind of left my pen there. It's just sitting there. It's not on. It's not doing anything."

Francis, 18-year-old man

“[Vaping] tasted good and it was mostly a social thing. It looked cool, and I wanted other people to think that I looked cool...it wasn't anything physical that I liked about it. But now...it's lame...There wasn't a dramatic shift...I think it...felt cool for me at this point, and then it just kind of was neutral...And then, people started making fun of it and it was kind of an ironic thing... And so, the whole feeling about it changed for me...” (027)

Jeffrey, 15-year-old young man

Aside from Foxy, participants categorized into this pathway had given up vaping and tended to describe ambivalent feelings about vaping which led to quitting entirely.

“[Vaping] doesn't really benefit me. It's not a stress relief. In my mind, it's a waste of money... For others...it's a stress relief so it benefits them...but to me, it doesn't. And I just don't care for it.”

Bob, 18-year-old man

“(Vaping's) just a phase, and that's it. Something I liked, it was cool at the time. I used it to my heart's content and that's it. Because it's pointless...I was using vape, like the flavors that I was using are nearly nicotine free. So why I need to use them in the first place? That's why I quit, and I don't even see myself vaping again.”

Mike, 19-year-old man

DISCUSSION

This qualitative study sought to understand the perceived role of vaping among youth who initiated vaping according to different pathways of nicotine use. Overall, youth, regardless of initiation pathway, were fully aware of the health consequences of smoking, and their decisions to vape reflected considerations of relative risk where vaping was seen as a suitable alternative to smoking. Some studies suggest that vaping as an alternative to smoking does not suggest a rational process of risk reduction but instead illustrates the ways in which nicotine consumption can be maintained in settings where smoking is prohibited.^{1,35,36} However, narratives from our participants reflected the ways in which youth considered risk reduction whereby vaping was strategically used to replace or reduce smoking to minimize short and long-term health risks, as a less harmful form of nicotine for coping with stress, or to temporarily

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engage in the positive social aspects of youthful experimentation while reducing the personal risks smoking presented.

The fact that youth consider relative risks and integrate ANDS as a transitional behavior towards smoking cessation highlights the need to acknowledge harm reduction in constructing public health messaging and policies. To date, studies have not sufficiently considered the practice of harm reduction among young people despite some qualitative research suggesting that they may very well be seeking out relatively less harmful nicotine products, like ANDS, either in lieu of or to reduce/quit smoking cigarettes.^{16–20,22,24,28,37} For example, in a qualitative study of 50 young e-cigarette users in Scotland and Northern England, McKeganey and colleagues found that decisions to continue vaping were often related to youth's perceptions that e-cigarettes were less harmful than smoking.²⁰ Likewise, Robertson and colleagues, found that though vaping was originally intended for smoking cessation among some of their participants, vaping “failed to meet their expectations” and therefore goals to eliminate smoking shifted into goals to reduce smoking.^{17(p2)} Participants in our study were generally more positive about vaping as a suitable replacement for smoking. But, like Robertson's participants, they similarly perceived the reduction in smoking that vaping facilitated to be valuable on the pathway towards eventual smoking cessation.

Tobacco harm reduction approaches emphasize the substitution of less harmful forms of nicotine (e.g. ANDS) for more harmful combustible tobacco products (e.g. cigarettes) for smokers, who are unable or unwilling to quit.^{38,39} Though some approaches to tobacco control may be considered harm reduction strategies (e.g. smoke-free environments),⁴⁰ most often abstinence is an explicitly-stated goal and discussions of reducing harm remain controversial, particularly when it comes to nicotine use by young people.^{38,41,42} This is largely due to concerns about the developmental risks associated with any nicotine consumption and the threat of long-term addiction,⁴³ combined with beliefs that young people behave irrationally and are in need of protection.^{44,45} This study suggests, instead, that youth are applying a logic of risk reduction to negotiate their nicotine use. Though tobacco harm reduction is arguably viewed as a “source of one of the most divisive...debates in tobacco control history,”^{39(p2)} our study highlights that tobacco harm reduction may be gaining momentum not as an explicit tobacco control strategy but rather as a “consumer-led health initiative” due to youth's use of vaping to reduce smoking-related harms.⁴²

Our findings should be interpreted in light of the following limitations. First the sample is not a representative sample of young vapers in the San Francisco bay area nor can it suggest which pathway of NT use is most common. Qualitative research is well-suited for identifying underexplored or unanticipated

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phenomena to inform hypotheses for future studies. Second, this study did not set out to compare perceptions across initiation pathways and, thus, did not have equal numbers of participants in each pathway. However, it is intriguing that the majority of ever vapers recruited into the study were classified in the smoking-to-vaping pathway, particularly in light of the invisibility of young people characterized by this pathway in the existing literature.³ Notably, since this was a study of youth who reported ever vaping, none were characterized into a smoking-only pathway. Future research should consider meanings of vaping among never vaping youth, both who smoke and those who do not. Also, this study cannot predict to what extent vaping for harm reduction ultimately leads to smoking cessation. This issue should be examined in future studies with longitudinal designs. Finally, we included a broad range of youth, 15-25 years old. Because qualitative research concerned with identifying variation of experience, we focused broadly on youth, as a socially-constructed category defined less by chronology and more by its progression of stages.^{46,47}

CONCLUSION

Narratives from young people in our study suggest that tobacco harm reduction strategies are being implemented in California, even without the broad support of the public health community. In other words, young “Smokers, of their own accord are doing exactly what Public Health experts exhort people to do – take responsibility for their own health.”^{42(p209)} Foregrounding harm reduction in studies of NT use among youth has important implications for avoiding a singular reliance on public health strategies that are “increasingly driven by concerns arising from the apparent increase in the prevalence of [ANDS] use by young people rather than by the evidenced benefit of e-cigarettes in facilitating a reduction in smoking prevalence.”^{20(p19)} Given the perceived utilitarian role of vaping for smoking reduction and cessation in our study, questions emerge as to whether a tobacco control strategy that imposes the strictest regulations on the most harmful forms of tobacco consumption (i.e. combustible products) might best serve young people who are likely to smoke and may need access to less harmful products for ultimately transitioning to a tobacco-free future.¹⁵ That being said, these efforts must be balanced with those that also discourage uptake of vaping among youth who are likely to never smoke.³ As Kozlowski has argued in defense of tobacco harm reduction, “In the often equally controversial area of sex education in schools, evidence is growing that comprehensive programs can be developed to increase both the number of students who abstain...and who practice safer sex.”^{45(p1107),48} The same is arguably true for developing comprehensive tobacco prevention, treatment, and policy efforts that simultaneously address the needs of different groups of youth.

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DECLARATION OF INTEREST

None to declare.

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