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RESEARCH ARTICLE



Understanding American Indian tribal college student knowledge, attitudes, beliefs, and behaviors surrounding alternative tobacco products

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ABSTRACT

Objectives: To examine knowledge, attitudes, beliefs, and behaviors about alternative tobacco products among American Indian tribal college students. **Participants:** One hundred and five tribal college students. **Methods:** Focus groups, one interview, and demographic surveys. **Results:** Tobacco use varied across the sample with 35.2% of the participants being users of ENDS products and 29.5% were cigarette smokers. Overall, participants viewed electronic nicotine delivery systems and chewing tobacco as primary examples of alternative tobacco products and described a generational divide between alternative and conventional tobacco product use. Alternative tobacco products were not considered suitable for use in traditional contexts. **Conclusions:** Previously successful cessation programs in this population have relied on cultural tailoring related to traditional tobacco use in American Indian communities. Our findings suggest that this strategy may be less effective for addressing alternative tobacco use. Reliance on the importance of family relationships may prove more impactful in future programming.

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Chewing tobacco; electronic nicotine delivery systems; ENDS; tribal college

Purpose

Though great strides have been made to reduce the burden of cigarette smoking across all racial and ethnic groups,¹ it remains the leading cause of preventable death in the United States.² In addition, there remain vast differences in recreational tobacco use in certain racial and ethnic groups, most notably among American Indians, that need to be addressed.^{1,3} American Indians have the highest smoking and smokeless tobacco use rates of all major racial or ethnic groups in the US at 27.1% and 6.8%, respectively, compared with Whites (13.3% and 3.2%), Blacks (14.4% and 0.8%), Hispanics (8.0% and 0.4%), and Asians (8.0% and 0.4%).³ Moreover, despite the relative decrease in recreational tobacco use across racial and ethnic groups, one concerning trend is the uptake of alternative tobacco products (e.g., e-cigarettes, cigars, pipes, snuff, snus, waterpipes, cigarillos, bidis, kreteks, and dissolvable tobacco products), which in 2020 became the second most commonly used tobacco product in the US.³

Greater cause for alarm is the overall popularity of alternative tobacco products among youth and young adults.^{4–6} Among students in both middle and high school, e-cigarettes were the most commonly used tobacco product at 19.6% for

high school students and 4.7% for middle school students.⁷ Similar to tobacco use generally, disparities remain among American Indian and Alaska Native students, with e-cigarette use at 12.7% from 2014 to 2017 compared to White (10.2%), Black (5.1%), Hispanic (9.9%), and Asian students (3.6%).⁸ This is especially concerning because tobacco use commonly begins in youth or young adulthood.⁷ Moreover, previous students have found that young adults of all racial or ethnic groups have a higher prevalence of tobacco use in general and are more likely to engage in polytobacco, or multiple tobacco product, use than other adult sub-groups.⁹ This high prevalence is particularly concerning because some studies have found that individuals who use ENDS are more likely to initiate cigarette smoking (OR 2.26) within at least 1.5 years. These individuals are highly likely to start smoking conventional cigarettes within a year.¹⁰ Although data detailing polytobacco use among American Indian youth is not currently available at the national level, American Indian and Alaska Native adults engaged in polytobacco use at 10.9% in 2020 compared to 3.6% among Whites, 2.9% among Blacks, 2.2% among Hispanics, and 1.4% among Asians in the US.³ This signals that perhaps a similar disparity exists among Native youth. Attempts to address these circumstances are complicated by the fact that American

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Indian tobacco users have more difficulty quitting compared to other ethnic groups^{11–13} and are the least successful in maintaining long-term abstinence.¹⁴

A necessary consideration for a comprehensive understanding of American Indian peoples' relationships with recreational tobacco is the cultural importance of the plant for some tribes or Nations.^{12,13} Tobacco is used for ceremonial, spiritual, and medicinal purposes by many different Nations throughout the Americas, sometimes involving smoking (though not through recreational cigarette use).¹⁵ The impact of the traditional use of tobacco on recreational smoking and other recreational tobacco use is only partially understood. The use of traditional tobacco appears to have a protective effect on smokers who have successfully quit, with individuals who use traditional tobacco showing a significantly higher quit rate at 12 months than nontraditional users. However, when traditional tobacco use involves smoking rather than using it in other ways, this protective effect goes away.¹² It is also likely that lower cessation rates among American Indians are due, in part, to a lack of culturally appropriate programs that acknowledge traditional tobacco.^{16,17} The best smoking cessation rates are found among individuals who have participated in culturally tailored programs that respect sacred tobacco, such as the All Nations Breath of Life,^{12,17,18} Stop Tobacco Abuse Renew Tradition,¹⁹ and Wiidookaawishin (HelpMe) QUITPLAN^{®20} smoking cessation programs. Potential impacts of traditional tobacco use on use of or cessation from alternative tobacco products or polytobacco use is unknown.

To begin to understand factors influencing alternative and polytobacco use among American Indians, this study sought to examine knowledge, attitudes, beliefs, and behaviors among American Indian tribal college students. This study was designed to explore the topic, and gain information needed to develop a culturally appropriate alternative tobacco product cessation program and educational materials for American Indian tribal college students.

Approach

From January 2019 to May 2019, tribal college students in the Midwestern United States were recruited into focus groups with an accompanying survey designed to help understand knowledge, attitudes, beliefs, and behaviors surrounding alternative tobacco product use. To assist with data saturation, focus groups were stratified by tobacco use, including individuals who had never regularly used any form of recreational tobacco, individuals who were current or former cigarette smokers, and individuals who were current or former users of alternative tobacco products. All information about tobacco status was self-reported; no biochemical verification was done. Individuals who were polytobacco users were grouped together with alternative tobacco product users because they used both alternative products and cigarettes, although this study's focus was participant understanding and use of alternative tobacco products. Focus groups were further stratified by gender, recognizing the differences in both recreational and traditional tobacco use by gender. The entire study followed a community-based

participatory research approach. Community members and collaborators at our partner tribal university provided guidance and feedback from the onset of this study. Moreover, all focus group facilitators were alumni of this institution and also led analysis of the focus group data.

Participants

All participants in the study self-identified as American Indian, were over the age of 18 and were currently enrolled in college courses. Recruitment was led by American Indian research assistants and was done through word-of-mouth, presenting study information to classes, using posters and flyers around campus, and through social media blasts on Facebook[®]. Participants provided written and verbal informed consent before participation and received a \$40 gift card and a meal for participating in the study. All study protocols were approved by both the recruiting medical center's human subjects committee and the tribal college's institutional review board. Nineteen focus groups and one interview were conducted with American Indian tribal college students. Though only focus groups were planned, at one planned group only one participant attended. Rather than turning the individual away, they were interviewed using the same questions. This interview was included with focus groups representing the stratum of the interviewee.

Method

The focus group sessions were held in a university campus library. Prior to participating in the focus groups, the study participants were asked to complete an online survey to provide demographic information and information about tobacco use of different types using the REDCap[®] survey collection tool. Upon completion of the survey, participants came together as a group for the focus group discussion. Each group was led by two American Indian graduate research associates, including one moderator and one assistant moderator whose primary role was to take notes and assist with group logistics. Moderators were matched to the gender of the group participants and the majority of moderators and assistant moderators were alumni of the tribal college. Discussions lasted between 15 and 45 min and were summarized by the assistant moderator at the close of the meeting to allow group members to clarify anything they wished. The single interview lasted 13 min. The focus groups and interview were digitally recorded and transcribed verbatim prior to analysis.

Measures

The participant survey included questions about demographic information, recreational tobacco and alternative tobacco product use, traditional tobacco use, and perceptions about tobacco use of others. To understand knowledge, attitudes, beliefs, and behaviors related to alternative tobacco use, focus group participants were asked questions about their understanding of different alternative tobacco products, their personal use of different tobacco products, their

experience with other people's use, their understanding of the differences between recreational products and the traditional use of tobacco, and their thoughts about how to target education and cessation programs to American Indian college students (see Table 1 for grand tour questions). Developed over several iterations by the research team including several American Indian tribal members, the focus group moderator's guide consisted of semi-structured open-ended questions. While questions differed based on stratum, several were the same across groups related to alternative tobacco products, policies, traditional tobacco use, and alternative tobacco cessation programs.

Analysis

Analysis followed a community-based participatory research approach that was previously developed by the research team.²¹ To ensure an understanding of themes by individual stratum, analysis was completed first by stratum, following which transcripts were examined for cross-strata themes. Three graduate research associates, including two American Indian students who had previously attended the tribal college, conducted the analysis. First, deductive coding was used to systematically organize and review each of the transcripts. The codebook used was developed during several prior tobacco-focused projects with American Indian communities. As coders proceeded, they met periodically to review codes and inductively add them as was needed to ensure that the codebook was appropriate for this study. Using an iterative

process, coders discussed how they were using each code and the results of their coding, allowing them to come to consensus on how the transcripts should be coded. By the end of the coding process, there was near 100% consensus among coders on how the transcripts were coded. Coders individually identified preliminary themes from each stratum and across strata. Preliminary themes were then sent to the project methodologist, who synthesized them into thematic statements that were then agreed upon by the entire research team. The project PI, who was a prior student from the tribal college, checked the themes for cultural fit. In this paper, we present themes that reached theoretical saturation across strata, as well as differences among strata.

The accompanying survey was analyzed using SAS version 9.4 (Copyright (c) 2016 by SAS Institute Inc., Cary, NC, USA). Discrete variables are described using frequency and percentages; continuous variables are described using mean and standard deviations. Higher level analyses were not done due to small sample size.

Results

Table 2 shows the demographic distribution and the tobacco use characteristics of the participants. The mean age of the 105 participants was 21.5 years with 52 (49.5%) reporting their gender as female, 52 (49.5%) reporting male, and 1 (0.9%) reporting their gender as other. The majority of the participants were freshman (46.7%), followed by sophomores (26.7%), juniors (13.7%), seniors (10.5%), and those in a graduate program (2.9%). In terms of tobacco use, 35.2% of the participants were current users of ENDS products, 29.5% were current cigarette smokers, and 20.0% were current poly-tobacco users.

Themes that emerged across the focus groups fell loosely into four topic areas focused on definitions of alternative tobacco; uptake characteristics and perceptions of alternative tobacco users; attitudes toward electronic nicotine delivery systems (ENDS) and traditional tobacco; and policy knowledge and opinions.

Definitions of alternative tobacco

Generally, ENDS and chewing tobacco were identified as examples of alternative tobacco products. Despite variation in tobacco use among participants, they widely considered ENDS and chewing tobacco as characteristic of alternative tobacco products as a whole. Specifically, these products included e-cigarettes and vapes while participants frequently identified products by brand names, including JUUL and NJOY, when asked which products constituted the category. Hookah was frequently mentioned as a product that merited inclusion, as well.

Uptake characteristics

Despite variation in current and former use of recreational tobacco products, participants across strata shared

Table 1. Focus group grand tour questions.

Topic	Sample Questions
Initial Questions for all Participants	What comes to mind when you hear the term "alternative tobacco products"? Do you think the use of these products are more or less common among American Indians than among other people?
Questions for Smokers	Have you ever thought about using alternative tobacco products instead of cigarettes? What about in addition to cigarettes? Have you ever heard about using alternative tobacco products to help you quit smoking? Have you ever thought about that? Have you ever tried to quit smoking? What did you try?
Questions for AT Users	What type(s) of alternative tobacco products do you use? When did you start using alternative tobacco products? Have you ever smoked? Was this before or after trying alternative tobacco products? Have you ever heard about using alternative tobacco products to help you quit smoking? Are you currently using alternative tobacco products to quit smoking?
Questions for Non-Tobacco Users	Have you ever tried any form of tobacco? What kind(s)? Did you use tobacco for any length of time? What made you stop? If you never started, why do think you never did?
Final Questions for all Participants	Are you aware of what the current laws are in your town for smoking? What about for alternative tobacco product use? Do you think there is a need for programs to help American Indians stop using alternative tobacco products? Why or why not?

Table 2. Focus group demographics.

	Smokers N(%)	ENDs Users N(%)	Polytobacco Users N(%)	Never Users N(%)	Total N
Gender					
Female	1 (1.9)	11 (21.2)	10 (19.2)	30 (57.7)	52
Male	8 (15.4)	5 (9.6)	11 (21.2)	28 (53.9)	52
Other	1 (1.0)	0 (0)	0 (0)	0 (0)	1
Age: Median	30	19	19	20	20
Year in school					
Freshman	4 (8.2)	10 (20.4)	14 (28.6)	21 (42.9)	49
Sophomore	1 (3.6)	3 (10.7)	5 (17.9)	19 (67.9)	28
Junior	2 (14.3)	1 (7.1)	1 (7.1)	10 (71.4)	14
Senior	3 (27.3)	1 (9.1)	1 (9.1)	6 (54.6)	11
Graduate Student	0 (0)	1 (33.3)	0 (0)	2 (66.7)	3
Where did you grow up?*					
On a reservation	3 (6.1)	5 (10.2)	11 (22.5)	30 (61.2)	49
On tribal trust land	2 (28.6)	0 (0)	1 (14.3)	4 (57.1)	7
In a rural area (off reservation)	2 (10.0)	3 (15.0)	5 (25.0)	10 (50.0)	20
In an urban area (off reservation)	4 (10.3)	9 (23.1)	8 (20.5)	18 (49.2)	39
In a suburban area (off reservation)	1 (5.0)	6 (30.0)	3 (15.0)	10 (50.0)	20
Other	1 (20.0)	0 (0)	1 (20.0)	3 (60.0)	5
Relationship status					
Married or living with a partner	0 (0)	0 (0)	0 (0)	1 (100.0)	1
Never married/Divorced, separated, or widowed	7 (7.5)	13 (14.0)	21 (22.6)	52 (55.9)	93
Other	3 (27.3)	3 (18.8)	0 (0)	5 (45.5)	11
Do you have children?					
Yes	5 (55.6)	0 (0)	0 (0)	4 (44.4)	9
No	5 (5.2)	16 (16.7)	21 (21.9)	54 (56.3)	96
Employment status*					
Full-time employee	0	0	0	1 (100.0)	1
Part-time employee	5 (27.8)	2 (11.1)	3 (16.7)	8 (44.4)	18
Student	9 (9.4)	15 (15.6)	20 (20.8)	52 (54.2)	96
Unemployed	1 (8.3)	0 (0)	5 (41.7)	6 (50.0)	12
College athlete					
Yes	2 (8.7)	1 (4.4)	4 (17.4)	16 (69.6)	23
No	8 (9.8)	15 (18.3)	17 (20.7)	42 (51.2)	82
Tobacco use for traditional purposes					
Yes	8 (13.1)	6 (9.8)	12 (19.7)	35 (57.4)	61
No	2 (4.6)	10 (22.7)	9 (20.5)	23 (52.3)	44

*Percent may not add up to 100 due to participant checking more than one response.

characteristics related to their reasons for initial use of these products. *Primarily, participants explained that they first experimented with or originally considered themselves tobacco users during their teenaged years.* One smoker claimed that their first time smoking cigarettes was “probably in middle school,” while another female smoker explained that she started regularly “keeping a pack of cigarettes on [her] when [she] was 16.” While an alternative tobacco user timed their use to “after high school graduation.” A woman who had never used any tobacco products stated that she believed that ages “12 to 14 is like that prime like when they [tobacco users] get into it.” Moreover, participants who identified as never users explained that they had experimented with recreational tobacco products during adolescence as well.

Building on these experiences, participants explained further that, in their communities, use of recreational tobacco products largely broke down along generational lines. Participants explained they felt that alternative tobacco products, and especially ENDs, were used by youth and people under the age of 30. One participant claimed that they “see the older folks like chewing, but then the younger ones use the JUULs and e-cigarettes.” Specifically, chewing tobacco, the most frequently mentioned type of alternative tobacco after ENDs, was thought to be used more by people over the age of 30. Reflecting on their home community, one

participant explained that “a lot of the older people use cigarettes and like chewing, but like I don’t see a lot of the younger kids anymore chewing it is more like the e-cigarettes.” One alternative tobacco user agreed, saying “thirty-year olds and younger are using JUULs. Thirty and up are still using cigarettes.” While another said that smoking cigarettes meant that, “you’re kinda...lame, old, gross.” When asked about this divide, one participant explained that the alternative tobacco audience was, “probably...13 to 20’s, yeah, 20’s...you don’t see a whole bunch of old people vaping.” This mirrored many participants’ observations of alternative tobacco marketing which they thought largely targeted younger people.

Among all groups of participants, friends and family members’ recreational tobacco use was highly influential in their decisions to use or abstain from these products. Among participants who found these influences encouraging recreational tobacco use, one user explained that “around 10, my grandma told me to smoke a cigarette with her. The whole weekend I spent at her house, I’d smoke cigarettes with her and I really started smoking when I was 17.” One alternative tobacco user claimed that changing their environment was a major factor in their choice to smoke less, explaining that, “I did...smokes for a little bit or like cigarettes, but when I came [to college], I literally quit. Well now I have them every now and then...now it’s not my thing anymore unless I go back to my grandparents.”

In contrast, many participants found these influences to discourage experimentation and use of recreational tobacco products. Reflecting on their childhood, one participant recalled that, “all my family smokes and chews...leaving my grandpa’s house, I’d just reek of cigarettes. So, I never liked that and, yeah, I just noticed all the negatives because all my family did it. And then I don’t wanna end up like that.” The impact of witnessing recreational tobacco use at a young age was brought up by another participant who had never used tobacco, because “my mom would always tell me once you start is just gonna be a continued purchase over and over again and then you’re just gonna end up smoking a pack a day. That’s how my great grandma died.”

Many participants who used alternative tobacco products previously or at the time of the focus group were previous smokers. They believed that making this switch was quite common. Convenience was the primary factor motivating this change, as one tobacco user stated “I used to smoke a lot before I came [to college], but then I just started JUULing instead, [it’s] just kind of easier.” One male participant explained, “The lure of it, they said [ENDS] would help you quit smoking cigarettes, it would help you cut back on it. That was why I tried it.” Use of ENDS as quit smoking aids varied amongst participants, with some making the switch completely and others using ENDS and cigarettes concurrently “to wean off smoking.” This was the case for one participant, who stated “at first, I got the JUUL then I was like, okay I’m not into smoking the cigarettes anymore, cool. But then I got addicted to the nicotine form, just vaping.” One never user also commented, “some parents are starting to get them nowadays just so they can stop smoking regular cigarettes.”

The overall convenience of alternative tobacco use was one of many characteristics cited by participants for their personal use and overall popularity these products among their peers. Central to this ease of use, participants mentioned alternative tobacco’s relatively discreet nature as a primary reason for transition from smoking cigarettes to using alternative tobacco, particularly its lack of smell. Because “it was easy to carry around,” one participant explained, “you could go to school with it, you could carry it with your friends, and it wouldn’t smell. That was a big thing, that it didn’t smell. So, my parents wouldn’t know.” The lack of smell, in comparison to cigarettes, was noted by participants as a key factor in its overall convenience as one female smoker explained, “you can get away with it, you won’t smell...you’re serving, you can go to the back of the restaurant, hit your JUUL, get a buzz, and come back in.” Several participants described the use of ENDS making smoking more comfortable by also eliminating the need to go outside because, “we have them in our pockets and...you get the nicotine while being inside and not going outside being cold...especially [in the winter].”

Among current and former alternative tobacco users, reasons for continued use of these products were the variety of flavors available in addition to the pressures of peer influence. Overwhelmingly, participants explained that available flavors of alternative tobacco products were a major contributing factor for its popularity. One participant explained this

stark contrast between ENDS and conventional tobacco products by saying “I guess it disguises how it actually tastes, you know? It’s like, ‘oh, this is good,’ rather than, ‘oh, dude, what am I doing?’” Flavor preferences included several fruit flavors, including blueberry and mango, herbal flavors like mint and vanilla, as well as flavors that mimicked popular products such as cotton candy and children’s breakfast cereals. Additionally, men who currently or formerly used chewing tobacco, preferred mint-flavored chew paralleling users of other alternative products.

Cessation, prevention, and barriers to success

Across strata, participants who were current users of recreational tobacco products expressed differential levels of desire to quit as well as number of previous quit attempts. Among current and former smokers, many participants expressed a desire to quit including several who had at least one quit attempt. One male smoker explained that “one time [he] went eight months without a pack, thought [he’d] never smoke again, but life happens.” Some even cited periods of success during these attempts. One recalled “a couple of times in which I quit. On average [it] can be a month to six months and you know after that I pick up that habit again.” Principally, among their reasons for wanting to quit were the potential health risks associated with continued use. One female participant explained, “I actually started to get short of breath and...whenever I’d go upstairs, I’d get out of breath quicker, so I was like yeah I probably need to stop smoking.” One male smoker claimed that smoking affected his athletic performance by saying “now that I haven’t been smoking cigarettes, I can keep going and going and going...so I do more cardio stuff” while another explained that he “wanted to walk onto the basketball team.”

Moreover, many male current and former smokers were aware of the purported use of ENDS as quit smoking aids, some citing use during their own quit attempts. One smoker explained, “they were made to get away from the cigarettes, but they still had nicotine in [them] and everybody looks for that little headrush.” One participant had used it during a quit attempt, but “the pods started to get expensive so I was like okay well I’ll get a pack of cigs, but then cigarettes are less expensive so I started smoking cigarettes again.” In comparison, among current and former alternative tobacco users, participants seldom described themselves as addicted to these products and would sometimes explain that they felt empowered to quit whenever they felt like it. Female participants in particular did not seem to consider themselves as addicted to alternative tobacco products, however this may be due to the fact that they were not current users.

Additionally, our male participants thought that use of alternative tobacco products among American Indians is likely similar, if not less, than other racial and ethnic groups. Participants, regardless of tobacco use status, agreed that American Indians use alternative tobacco products, especially ENDS, no more than other groups in the United States. One female participant suggested that it was “probably about the same.” A male smoker further explained that

this was evident in the marketing strategies for many alternative tobacco products by saying, “look at the commercials, everybody’s multi-cultural, you know especially like on billboards. Everyone’s multi-cultural. Just everybody you know.”

While participants did not think that American Indians are targeted by alternative tobacco advertisements, their relative ease of obtainability merited the development of programs to prevent American Indian youth and young adults from using them or help them quit if they have already started. One alternative tobacco user claimed that “statistically Native Americans use drugs and tobacco more than any other race so that right there is a major point for why we need a program.” Many participants noted the wide popularity of ENDS among both high school and college students as a major factor influencing their opinions on such programs. One female smoker explained that she would not be surprised to see “10 to 15 people that could pull out an NJOY like a JUUL” in her university’s classrooms. Specifically, participants emphasized the importance of youth-focused prevention and addiction treatment programs because tobacco use has “become too normalized... especially for people who are younger. Like that’s not good because they’re not fully grown up yet.” Reflecting on the overall popularity of ENDS, one male alternative tobacco user reiterated, “I feel like there should be a lot more programs for the youth, because it is crazy.”

This may be due, at least in part, to the role of recreational tobacco marketing strategies. According to our participants, unlike advertisements for other recreational tobacco products which frequently target American Indian communities, marketing for alternative tobacco products directly target youth, especially those for ENDS.

Traditional tobacco

Participants did not think it was appropriate to substitute alternative tobacco products in place of traditional tobacco, with the exception of loose chewing tobacco. Many participants were either aware of or participated in the use of tobacco for traditional purposes whether through offerings or prayer, among other uses. When asked about the potential for use of alternative tobacco products ceremonially, participants found it inappropriate primarily because of the lack of plant material in many forms of alternative tobacco. One female smoker explained, “if you think of it, e-cigarettes and all that, it’s all man-made juices compressed with other stuff in it, but tobacco itself is from the Earth.” Another alternative tobacco user believed that “if you start doing that then the tradition is gone.”

However, several participants recalled using loose chewing or pipe tobacco traditionally, highlighting the various considerations made between different forms of alternative tobacco products. One participant explained, “I think a lot of people say as long as it is in plant form, like with cigarettes, they might say a prayer over some tobacco from a cigar...I don’t know if you would use chew for tobacco, would you like throw a JUUL pod out there?” adding that “as long as it’s not an e-cigarette it’s got to be like pure tobacco or maybe...chewing tobacco as long as it’s any type of tobacco you can hold, you know what I mean?”

Policy knowledge and opinions

Overall, participants were aware of restrictions related to alternative tobacco products. Participants across strata noted increases in purchasing age for tobacco products from 18 to 21. However, some noted differences between their home communities and where they were attending college. One participant explained, “since the JUUL pods are going up, especially...in California, since they’re not legal there, you have to be 21, they just...buy the liquid for vapes, and then they just fill up the pods again.” Another noted that, “up in Oregon they changed the law to 21 now to buy cigarettes.”

Conclusion

To our knowledge, this is the first study to focus specifically on American Indian college students while assessing their knowledge, attitudes, beliefs, and behaviors of alternative tobacco products. The data from these focus groups allow us to begin understanding some key factors in alternative tobacco use and provide an important steppingstone for future research with this population. There are several key findings that emerged from our analysis of these focus groups. The main types of alternative tobacco products identified as being used by American Indians were smokeless tobacco and ENDS products, leaving other products such as pipes, waterpipes, and cigarillos less commonly identified among this population. Further, definitions and terminology used by participants (vape, JUUL, etc.) echo those used in other populations.²² Motivations for use among our participants such as flavor, lack of smell, and convenience also reflected findings in other groups,^{23,24} suggesting that American Indian ENDS uptake characteristics may share similarities with the general population. These conclusions suggest that participants’ perception that ENDS and alternative tobacco advertising does not target American Indians specifically may be accurate and represent less of a factor in general ENDS use in comparison to cigarette smoking.

The increase of ENDS use among youth has been shown in the literature^{7,8,24,25} and discussions with our participants suggest this perception also exists among Native college students. This generational distinction suggests that a broad, overarching program that targets all alternative tobacco products, including smokeless tobacco, would likely be less successful than more targeted programming. These findings also support the need for targeting certain age groups related to specific tobacco product prevention and cessation programs. As we predicted, the relatively younger ages of American Indian alternative tobacco users, particularly when targeting ENDS use, necessitates the development of programs that should be geared toward a younger, teenaged to young adult audience, a group typically ignored by traditional cessation approaches.

Lastly, most American Indian college students were aware of traditional tobacco uses and believed that alternative tobacco products such as ENDS were not an acceptable substitute. This suggests that differences between categorization of tobacco products may impact the integration of teachings and beliefs related to traditional tobacco into prevention and cessation programs for alternative tobacco,

specifically ENDS. As our participants explained, the lack of physical tobacco plants seems to place ENDS in a separate category, which may limit the effectiveness of successful culturally tailored programs for American Indians. Alternative tobacco cessation programming may find an emphasis on the sacred nature of tobacco insufficient. Instead, findings from our focus groups highlight the importance of family and peer influence in abstinence and uptake of tobacco products. Programs that concentrate on these relationships, and the impact of recreational tobacco use on friends and family around users may be more successful, particularly if they emphasize the importance of kin relationships in many American Indian communities.

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Conflict of interest disclosure

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