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Dual Versus Never Use of E-cigarettes Among American Indians Who Smoke

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Abstract

Introduction: Many American Indian communities have a high prevalence of smoking and e-cigarette use, but factors associated with their dual use are rarely studied.

Methods: In 2016, a total of 375 AI adults who smoke completed paper surveys regarding cigarette and e-cigarette use and provided saliva for cotinine levels. In 2018, cross-sectional analyses were performed, comparing dual users (12%), defined as using e-cigarettes on some or every day for the past 30 days, with never e-cigarette users (37%).

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Contributions: All authors contributed to the design of the study. Dorothy A. Rhoades, Ashley L Comiford, Justin Dvorak, Kai Ding, Michelle Hopkins, Theodore L. Wagener, and Mark P. Doescher also developed the survey instrument. Dorothy A. Rhoades and Ashley L. Comiford also provided summaries of previous research studies. Justin Dvorak and Kai Ding also conducted the statistical analysis. Leslie Driskill also conducted laboratory analysis. Dorothy A. Rhoades wrote the first draft and the revised draft, and all authors contributed to and approved the final manuscript.

A manuscript that contains portions of the methods has been recently published. Otherwise, article contents have not been previously published, but an abstract based on the information was accepted for an oral “short talk” and a poster presentation at the American Association for Cancer Research conference on the Science of Cancer Health Disparities among Minority and Underserved Populations, held November 2–5, 2018 in New Orleans, LA.

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Results: Compared with never users, dual users were younger, more often reported history of depression (56%, 29%, respectively; $p<0.01$) and family history of smoking-related disease (77%, 59%; $p<0.05$), had lower harm perceptions of e-cigarettes (27%, 47%; $p<0.01$) or vapor (14%, 35%; $p<0.01$), and more often perceived e-cigarettes as cessation aids (75%, 16%; $p<0.01$) and as less harmful than cigarettes (70%, 17%; $p<0.01$). Dual users were less often uncertain/unknowing about e-cigarette benefits or harms ($p<0.01$), and more often reported a likelihood to quit smoking (49%, 24%; $p<0.01$), prior attempt to quit smoking ever (89%, 67%; $p<0.01$) or in the past year (55%, 32%; $p=0.01$). Cigarette consumption and cotinine levels did not differ between groups. Dual users more often tried other nicotine products ($p<0.02$) and more often lived with a vaping partner/spouse (45%, 6%; $p<0.01$).

Conclusions: Dual users perceived e-cigarettes as less harmful than cigarettes and more as cessation aids than cigarette-only users, but cigarette consumption did not differ between groups. Whether e-cigarettes will reduce smoking-related disparities among American Indian people remains undetermined.

INTRODUCTION

E-cigarettes are increasingly used by adults who smoke, including American Indian and Alaska Native (AI/AN) people, who are rarely included in e-cigarette studies. Most adults who smoke and use e-cigarettes do so to reduce or quit smoking,[1–6] but whether these products reduce smoking-related harms remains to be seen.[7–10] Some studies suggest e-cigarettes provide little to no improvement in smoking cessation,[11–14] whereas others conclude cigarette consumption is reduced[15,16] or replaced by e-cigarette use.[17] Others suggest that regular use of e-cigarette products with highly efficient nicotine delivery may improve smoking-cessation rates.[4,18] Upon initial use of e-cigarettes, most adults who smoke do not completely stop smoking but use both products concurrently.[19] The American Cancer Society strongly discourages concurrent, or “dual”, e-cigarette use[20] because such use has not been shown to reduce exposure to carcinogens or toxins.[21]

Research reveals few demographic characteristics consistently associated with dual e-cigarette and cigarette use. Younger age has been associated with dual use in most adult studies, but not all.[3–5,19,22–28] E-cigarette use was associated with male sex in some studies, female sex in others, and no effect by sex in yet others.[3,12,22–27] Inconsistent, but generally null, findings have been reported for education status,[3,4,22–27] income/SES,[3,22,25,29] and marital status.[3,23] E-cigarette use has also been associated with the perception that e-cigarettes are less harmful than other tobacco products.[30]

Prevalence of e-cigarette use is the highest for AI/AN people among single-race groups in the U.S.,[19,31] but large, nationwide reports of factors associated with e-cigarette use do not include them. AI/AN people also have the highest prevalence of cigarette smoking in the U.S.[32] Considerable regional variation in tobacco use exists, with smoking prevalence particularly high among AI communities in the Plains states,[32–36] where they have among the highest smoking-related morbidity and mortality.[33,37,38] AI patterns of smoking differ from other racial and ethnic groups[39] and AI people may have a lower smoking-cessation rate and higher relapse rate than other populations.[38,40–42] Thus, the impact of e-cigarette

use on smoking among AI people may not be extrapolated from other populations. To date, only one study includes a comparison of AI dual users with cigarette-only users.[43]

In 2016, baseline data were collected for the Vaping among Smokers: A Cherokee Nation Cohort Study, the first in depth exploration of e-cigarette use among AI adults who smoke.[44] Because electronic nicotine delivery products are continuously evolving, recent (past 30–day) use may include people only experimenting with e-cigarettes.[45] Greater focus is needed on the more regular use of both e-cigarettes and cigarettes. This study compares such dual users with people who smoke but never used e-cigarettes.

METHODS

The current study was a cross-sectional comparative analysis of the subsets of dual e-cigarette users and e-cigarette never users in a cohort of AI adults who smoke. In 2016, survey and biomarker data were collected from the cohort to assess prevalence and potential impact of e-cigarette use on smoking behavior. Methods for the cohort study are described in detail elsewhere,[44] and briefly as follows.

Study Sample

Recruitment for a convenience sample occurred from April to September in 2016 at a large Cherokee Nation Health Services primary care facility in predominantly rural, northeastern Oklahoma.[44] Though Cherokee Nation citizens comprise the largest group of patients, many other tribal members also use Cherokee Nation Health Services facilities. Eligibility for services includes proof of AI/AN descent, such as a Certificate of Degree of Indian Blood, from a federally recognized AI/AN tribe or community.

Study staff maintained an information table announcing the study in a high-traffic waiting area within a large outpatient Cherokee Nation Health Services facility.[44] Unless approached first, which occurred for the vast majority of participants, staff also approached potential participants in the waiting areas to offer information on the study.

Eligibility to participate in the cohort included being aged ≥18 years, smoking at least 100 cigarettes ever, smoking in the past 30 days, and answering *yes* to both: *Are you American Indian?* and Do you have a *Certificate of Degree of Indian Blood card?*

As described previously,[44] after providing written informed consent, participants completed a pen and paper survey and provided saliva samples on site. Samples were cooled and transported to a −80° Celsius freezer within 72 hours.

Measures

Never users were identified by answering *no* to ever using an e-cigarette product. People who answered *yes* to this question were asked: *On how many of the past 30 days did you use an e-cig or vape even one or two times?* Individuals who answered *0* were excluded from the present analysis. Individuals who used an e-cigarette product in the past 30 days were then asked if they *now use e-cigs or vape every day, some days, or not at all?* People responding

not at all were also excluded. This defines dual e-cigarette users as people who smoke and used e-cigarettes on some or all of the past 30 days.

Demographic variables included age, sex, education, annual household income, and marital/partner cohabitation status.

Health and family history measures included general health status (*excellent*, *very good*, *good*, *fair*, or *poor*). Participants also reported if they were ever told by a health professional that they had lung, head and neck, or other cancer; cardiovascular or heart disease; diabetes; chronic obstructive pulmonary disease; or emphysema. History of depression (*yes*, *no*, *don't know/not sure*) was determined if a participant checked *yes* to the question indicating: *if a doctor or other health professional ever told you that you had…Depression?* A family history of cancer or heart disease was present if respondent answered *yes* to either: *Has someone in your family ever had cancer?* or *Has someone in your family ever had heart disease?* Participants were instructed to include mother, father, brother, sister, or children. For composite measures (any medical or any family history), any *yes* response in the set was coded as "yes." If a participant responded *no* to all items in the set, the result was coded as "no" (no missing items allowed). If a participant had any missing responses, and all other non-missing responses were *no*, then the composite result was treated as missing.

Perceptions of harm or benefits were assessed by asking: *How harmful do you think [cigarettes/e-cigarettes] are to health?* and *Do you think that breathing smoke from other people's [cigarettes/vapor] is…* with responses being *not at all harmful*, *slightly harmful*, *somewhat harmful*, *very harmful*, *extremely harmful*, *don't know/not sure*. Responses were categorized into three groups: "low" perceived harm (not at all/slightly harmful); "high" (somewhat/very/extremely harmful); or "don't know/not sure." Responses to *To what extent do you agree with the following statements?* included *definitely yes*, *probably yes*, *probably not*, *definitely not*, and *don't know/not sure*, for the following: *E-cigs help people quit smoking cigarettes*, and *E-cigs are less harmful than cigarettes*. Responses were categorized into three groups owing to small sample size of dual users.

Smoking at least once daily for the past 7 days defined daily smoking. Respondents provided number of cigarettes smoked per day. Packs per day was categorized as fewer than one pack (<20 cigarettes) or one or more packs (≥20 cigarettes).

Salivary cotinine level (ng/mL) was assayed using a Salimetrics Salivary Cotinine ELISA kit as described elsewhere.[44] All salivary samples ran in duplicate, with results reported as mean values of each duplicate set.

Three smoking dependence scales were included. The Hooked on Nicotine Checklist[46] was scored from 0 to 10 based on *yes*/*no* responses to the ten-item checklist (Appendix Table 1). Heaviness of Smoking Index[47] was calculated based on time to first cigarette of the day in minutes (≤5 minutes, 6–30 minutes, 31–60 minutes; and ≥61 minutes) plus the average number of daily cigarettes. In addition, participants completed the Penn State Cigarette Dependence Index[48] (Appendix Table 2).

Confidence to quit smoking next month was assessed using a ladder scale, with 0 being *not at all* confident and 10 being *very* confident.[49] The survey also asked: *How soon are you likely to quit smoking?* Any response other than *I am not likely to quit smoking* was classified as "likely" to quit ever. Likelihood to quit smoking within 6 months included the responses *within the next 30 days* and *within the next 6 months*. Lifetime smoking-cessation attempts were categorized as "never" if the respondent answered, *I have never tried to quit smoking*, and as "ever" if indicated at least one lifetime attempt. For past 12 month quit attempts, participants were asked: *During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit?* (*yes*/*no*).

Ever use of other tobacco products was *no* if respondent never tried the following: smokeless tobacco (chew/spit, or snuff/dip), cigars, cigarillos, filtered cigars, hookahs, or dissolvable tobacco.

For people living with a spouse or partner, participants were asked: *Does your spouse/partner smoke?* (*yes*/*no*) and *Does your spouse/partner vape or use e-cigs?* (*yes*/*no*).

Statistical Analysis

Research staff double entered all survey data. Baseline characteristics were compared between groups using Student's *t*-test or the Wilcoxon rank sum test for continuous variables, with the latter used when the assumption of normality was questionable, and chi-square or Fisher's exact test for categorical variables, with Fisher's test used when expected cell counts were low (<5). All statistical tests were performed with SAS, version 9.4. A two-sided *p*-value of 0.05 was used as the threshold for statistical significance. Analyses were completed in 2018.

The Cherokee Nation IRB and the University of Oklahoma Health Sciences Center IRB approved this study. All participants provided written informed consent and received a $20 gift card.

RESULTS

Characteristics of the cohort are described in detail elsewhere.[44] Among the 386 people who completed screening, 375 were eligible and agreed to participate. The present analysis included the subsets of 44 participants (12%) who were dual users, defined as noted above, and the 137 (36%) who never used e-cigarettes. The remaining participants were former or infrequent e-cigarette users, described elsewhere.[44]

Table 1 shows demographic and health related measures for dual users and never users. Compared with never users, dual users were significantly younger but did not differ by other demographic characteristics, general health status, or medical history. Dual users reported a history of depression and family history of cancer or heart disease significantly more often than did never users.

Table 2 shows perceptions of harms or benefits of smoking and e-cigarette use. No differences between groups occurred for smoking-related perceptions of harm. By contrast, perceptions of harms of e-cigarettes or secondhand vapor were significantly lower for dual

users than never users. Dual users more often perceived e-cigarettes as helpful in quitting smoking and as less harmful than cigarettes. Dual users were also uncertain or unknowing about e-cigarette harms or benefits significantly less often than were never users.

Table 3 shows smoking-and tobacco-related measures among dual and never e-cigarette users. The frequency of daily smoking did not significantly differ between groups. Although the point estimate of cigarettes smoked per day was higher for dual users, the difference was not statistically significant. No difference in salivary cotinine levels or smoking dependence scores occurred between groups.

Although confidence to quit smoking did not differ between groups, self-reported likelihood to quit smoking anytime or in the next 6 months was significantly higher among dual users, as were ever and past 12 month attempts to quit smoking. Dual users also tried snus, cigars, cigarillos, or hookah much more often than had never users. However, when any other tobacco use was collapsed into one variable, the difference lost significance. Living with a partner who smokes was not associated with dual use, but living with a partner who vapes was.

DISCUSSION

In this cohort of AI adults who smoke, the prevalence of dual e-cigarette use, defined as past 30 day use on some or every day, was 12%. In other populations, estimates of dual e-cigarette use, variably defined as more frequent than experimental or occasional use, rose from 3%–4% in 2013–2014[22,24] to 24%[3] and 52%[4] in 2014. In a study of smokers with cardiovascular disease, on the other hand, only 3.7% reported dual use in 2014.[50] The present sample differed from most of these, not only in including AI participants and in the definition of dual use, but also in the outpatient setting. However, this study provides a reasonable estimate for dual use of e-cigarettes in a sample of AI adults who smoke.

Younger age is one of the few demographic characteristics consistently associated with e-cigarette use among adults, as in this study. Previous research shows inconsistent associations of other demographic factors with dual e-cigarette use, none of which was significant in the present study.

Health status and personal medical history, not significant in the present study, are infrequently assessed in other studies of dual e-cigarette use. Poor self-perceived health was associated with lower odds of e-cigarette product use among people who smoke in one but not in other studies.[27,28,51,52] In another, e-cigarette users had more medical illness than non-users, but only in unadjusted analysis.[27]

Although depression and tobacco use are closely linked,[53–56] depression among dual e-cigarette users has rarely been described,[27] and never for AIs. Whether e-cigarettes have a causal versus mitigating effect on mood disorders deserves further study,[57,58] as does whether this effect will be greater among AI people than other racial groups, as they generally have a higher burden of mental health disorders than do whites.[59]

Family medical history associated with e-cigarette use has not been assessed in other studies of dual users, although family history of lung cancer was associated with contemplating quitting smoking in one study.[60]

Perceptions of e-cigarette harms or benefits have not been reported for AI people who smoke, but among AI youth, e-cigarettes were more favorably viewed by e-cigarette ever users than never users.[61] Similar to the present study, others show that e-cigarette users perceive e-cigarettes as less harmful than cigarettes and as being helpful in smoking cessation.[3,8,28,51,62–64] Few studies on perceptions of e-cigarettes report on the uncertainty users may have about these products. One study, similar to this study, found that 23% of cigarette-only users did not know or respond whether electronic nicotine products were more or less harmful than cigarettes, compared with only 6.3% for people who used both cigarettes and electronic nicotine products.[51]

Most observational studies also report no difference in cigarette consumption among dual users.[6,12,43] By contrast, the Population Assessment of Tobacco and Health (PATH) study found that frequent e-cigarette use was associated with lower cigarette consumption,[65] and intervention studies introducing e-cigarettes to people who smoke often show reduced cigarette consumption.[15,16,26,66,67] Whether the dual users reduced their cigarette consumption prior to the present study is unknown.

Other studies show varying results for cotinine or nicotine among dual users. In one, urinary nicotine levels were higher among dual users than cigarette-only users for women, but not for men.[68] In one study of people who smoke, cotinine levels did not change after starting e-cigarettes.[16] Yet, in another study, cotinine levels declined among dual users.[69] In the present cross-sectional study, cotinine did not differ between dual and never users.

A borderline trend toward higher Hooked on Nicotine scores for dual users was found in an AI study,[43] similar to the current study. Others suggest that dual or current e-cigarette use is associated with higher nicotine dependence among people who smoke[26,27,68]; yet, at least one does not.[70]

Confidence to quit smoking is assessed infrequently among dual e-cigarette users in observational studies. In an interventional study, confidence to quit smoking increased significantly after 1 week of e-cigarette use.[67] The effects that initiation of e-cigarette use may have had on confidence to quit in the present study are unknown.

Intention to quit smoking was associated with dual e-cigarette use in univariate but not multivariate analyses in one study.[71] In another, electronic nicotine product use was associated with intention to quit, but not in a longitudinal cohort.[28] Like the present study, others show that e-cigarette use is strongly associated with previous quit attempts.[3,15,27,72]

The more frequent use of other tobacco products by dual users in this study may indicate that dual users belong to the group of people who seek out multiple products to reduce smoking.[73–75]

Having a spouse or partner who vapes is rarely examined among dual users. In one study, a household vaping ban was less common among dual users than cigarette-only users.[76] More exploration of the strong effect found for the living environment on vaping behavior is needed.

The American College of Preventive Medicine suggests a potential role for e-cigarettes in harm reduction for people who smoke, but only if combustible cigarette use is reduced.[77] Furthermore, health benefits of reducing but not quitting smoking may be limited.[78] Dual users in this study did not have lower cigarette consumption compared with never e-cigarette users. Although limited by the cross-sectional design, this finding does not support dual use for harm reduction.Clinical and public health providers in this population should instead recognize that dual users appear particularly motivated to reduce their smoking, and continue the Cherokee Nation's strong messaging and support for evidence-based smoking-cessation interventions.[79]

Limitations

Study limitations include clinic-based convenience sampling and small sample size, which reduce detection of factors with moderate or small associations and generalization to other populations. Nonetheless, knowledge about vaping is limited in AI/AN healthcare settings[80] and this study provides new information for public health and healthcare researchers and providers in other AI communities with a high prevalence of tobacco use.

Ceremonial tobacco use was not included because it differs from habitual use.[39,81,82] Although one study found that ceremonial tobacco use was less prevalent among AI dual users than cigarette-only users,[43] e-cigarette use in relation to ceremonial tobacco is unknown.

CONCLUSIONS

Dual use of e-cigarettes among AI people who smoke was not associated with reduced cigarette consumption but was associated with quit attempts and more favorable perceptions of e-cigarettes. Several potentially important factors associated with e-cigarette dual use emerged in this study. Whether e-cigarette use proves beneficial or harmful, these factors may inform future efforts to reduce smoking-related health disparities among AI people.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Demographic and Health-related Measures by E-cigarette Dual or Never Use Among AI Who Smoke

Characteristics	Dual user N=44	Never user N=137	*p*-value
Demographic measures			
Age group, years, n (%)			**0.02**
18–44	30 (68)	65 (47)	
≥45	14 (32)	72 (53)	
Sex, male, n (%)	16 (36)	54 (39)	0.86
Education, n (%)			0.31
Less than high school	10 (23)	35 (26)	
High school/GED	13 (30)	54 (40)	
More than high school	21 (48)	47 (35)	
Annual household income, n (%)			0.84
$0–$30,000	33 (77)	104 (78)	
>$30,000	10 (23)	29 (22)	
Marital status, n (%)			0.30
Live alone	23 (52)	58 (43)	
Living with spouse/partner	21 (48)	77 (57)	
Selected health measures General health, n (%)			1.00
Excellent/Very good/Good	27 (63)	84 (62)	
Fair/Poor	16 (37)	51(38)	
Selected medical conditions,[a] n (%)			0.44
Yes	31 (76)	83 (69)	
No	10 (24)	38 (31)	
Depression, n (%)			**<0.01**
Yes	24 (56)	37 (29)	
No	19 (44)	92 (71)	
Family history, cancer or heart disease, n (%)			**0.04**
Yes	33 (77)	76 (59)	
No	10 (23)	53 (41)	
Family history of cancer, n (%)			**0.05**
Yes	25 (58)	54 (41)	
No	18 (42)	77 (59)	

Notes: Percentages may not equal 100 due to rounding. Education was missing for one participant, income for five, general health for three, medical condition for 19, depression for eight, and family history for seven. Missingness did not differ between groups for any of these variables. Boldface indicates a statistically significant finding ($p<0.05$).

[a]Major smoking-related medical conditions included lung cancer, head or neck cancer, other cancer, cardiovascular or heart disease, diabetes, chronic obstructive pulmonary disease or emphysema.

AI, American Indian.

Table 2.

Perceptions of Harm or Benefit by E-cigarette Dual or Never Use Among AI Who Smoke

Perceptions of harm or benefit	Dual user N=44	Never user N=137	*p*-value
Perceived harm of cigarettes, n (%)			0.18
Low	5 (12)	28 (21)	
High	38 (88)	100 (74)	
Don't know/Not sure	0	8 (6)	
Perceived harm of secondhand smoke, n (%)			0.55
Low	10 (23)	33 (24)	
High	32 (73)	88 (65)	
Don't know/Not sure	2 (5)	14 (10)	
Perceived harm of e-cigarettes, n (%)			**<0.01**
Low	28 (64)	33 (24)	
High	12 (27)	63 (47)	
Don't know/Not sure	4 (9)	39 (29)	
Perceived harm of secondhand vapor, n (%)			**<0.01**
Low	33 (77)	39 (29)	
High	6 (14)	47 (35)	
Don't know/Not sure	4 (9)	48 (36)	
E-cigarettes help quit smoking, n (%)			**<0.01**
Definitely or probably yes	33 (75)	22 (16)	
No	7 (16)	62 (46)	
Don't know/Not sure	4 (9)	51(38)	
E-cigarettes less harmful than cigarettes, n (%)			**<0.01**
Definitely or probably yes	30 (70)	23 (17)	
No	10 (23)	62 (46)	
Don't know/Not sure	3 (7)	49 (37)	

Notes: Percentages may not equal 100 due to rounding. Boldface indicates a statistically significant finding ($p<0.05$). Cigarette harms was missing for two, secondhand smoke harms for two, e-cigarette harms for two, secondhand vapor harms for four, perceived helpfulness in quitting smoking for two, and less harmful than cigarettes for five. Missingness did not differ between groups for any of these variables.

AI, American Indian.

Table 3.

Tobacco Use and Related Measures Among Dual and Never E-cigarette Users Among AI Who Smoke

Measure	Dual user N=44	Never user N=137	*p*-value
Daily smoking, n (%)			1.00
Yes	31 (70)	97 (71)	
No	13 (30)	39 (29)	
Cigarettes/day, median [25%, 75%]	15 [7, 20]	10 [5, 20]	0.16[a]
Cigarette pack/day, n (%)			0.36
<1 pack per day	26 (59.09)	90 (67.16)	
≥1 pack per day	18 (40.91)	44 (32.84)	
Salivary cotinine, ng/ml, mean (SD)	393 (334)	349 (364)	0.26[b]
HONC scale,[46] median [25%, 75%]	8.0 [6.0, 9.5]	6.0 [3.0, 9.0]	0.07
HSI scale,[47] median [25%, 75%]	2.5 [1.0, 3.8]	2.0 [1.0, 3.0]	0.64
PSDI scale,[48] median [25%, 75%]	11.0 [7.0, 16.0]	10 [6.0, 15.0]	0.34
Confidence to quit smoking, 1 month,[49] mean (SD)	3.25 (2.69)	2.96 (2.85)	0.55
Likelihood to quit smoking, anytime, n (%)			**0.01**
Yes	37 (86)	88 (65)	
No	6 (14)	47 (35)	
Likelihood to quit smoking 6 months, n (%)			**<0.01**
Yes	21 (49)	33 (24)	
No	22 (51)	102 (76)	
Lifetime quit attempt ever, n (%)			**<0.01**
Yes	39 (89)	92 (67)	
No	5 (11)	45 (33)	
Past 12-month quit attempt, n (%)			**0.01**
Yes	24 (55)	44 (32)	
No	20 (45)	92 (68)	
Other tobacco use ever, n (%)			
Chew/spit	16 (36)	58 (42)	0.60
Snuff/dip	18 (41)	60 (44)	0.86
Pipes	20 (45)	50 (37)	0.29
Snus	16 (36)	13 (10)	**<0.01**
Cigars	30 (68)	63 (46)	**0.01**
Cigarillos	36 (82)	77 (56)	**<0.01**
Hookah	22 (50)	19 (14)	**<0.01**
Any of the above	38 (86)	99 (72)	0.07
Partner smokes (among those living with partner)			0.59
Yes	14 (67)	56 (73)	
No	7 (33)	21 (27)	
Partner vapes (among those living with partner)			**<0.01**
Yes	9 (45)	5 (6)	

Measure	Dual user N=44	Never user N=137	*p*-value
No	11 (55)	72 (94)	

Notes: Percentages may not equal 100 due to rounding. Boldface indicates a statistically significant finding ($p<0.05$). Data were missing for cigarettes and packs per day for three participants, cotinine for three, Hooked on Nicotine score for four, Heaviness of smoking index for eight, PSDI for ten, confidence to quit for one, likely to quit ever or in 6 months for three, quit attempts for zero, chew/spit or snuff/dip for zero, snus for one, cigars, pipes, cigarillos, and hookah for zero, partner smoking for zero, and partner vaping for one. Missingness for each variable was assessed with Fisher's exact test and did not significantly differ between groups.

[a] Wilcoxon rank-sum test.

[b] Two-sample *t*-test on log-transformed cotinine.

HONC, Hooked on Nicotine Checklist[46]; HSI, Heaviness of Smoking Index[47]; PSDI, Penn State Dependence Index.[48]