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Brief Report
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Blunt and Non-Blunt Cannabis Use and Risk of Subsequent Combustible Tobacco Product Use Among Adolescents

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Abstract

Introduction: Cannabis—including blunts (cannabis rolled in tobacco-containing cigar casing) —is commonly the first substance used among adolescents and may increase the likelihood of subsequent initiation of combustible tobacco products.

Aims and Methods: Data were pooled from two prospective studies of adolescents in California and Connecticut (total *N* = 4594). Logistic regression models assessed the association of baseline ever blunt use and ever non-blunt cannabis use (vs. never cannabis use) with subsequent initiation of any combustible tobacco-only product (ie, cigarettes, cigars, or cigarillos) by 1-year follow-up after adjustment for demographic characteristics and other tobacco product use at baseline. We also assessed whether estimates differed by prior e-cigarette or hookah use at baseline.

Results: Among never combustible tobacco-only product users (*N* = 2973), 221 (7.4%) had ever used a blunt and 114 (3.8%) had ever used only non-blunt cannabis at baseline. Blunt use (adjusted odds ratio [AOR] = 1.98, 95% confidence interval [CI]: 1.30 to 3.01) and non-blunt cannabis use (AOR = 2.38, 95% CI: 1.41 to 4.00) were independently associated with greater odds of combustible tobacco-only product initiation by follow-up. Among those who had not tried e-cigarettes or who had not tried hookah, blunt use and non-blunt cannabis use were associated with significantly increased odds of combustible tobacco product initiation; among those who had tried e-cigarettes or hookah, the association was not significant.

Conclusions: We found blunt and non-blunt cannabis use to be associated with subsequent combustible tobacco-only product initiation, particularly among adolescents who had not also tried other products containing nicotine.

Implications: Adolescent-focused tobacco prevention efforts should consider incorporating cannabis products, including blunts. More research is needed to understand how blunt use and cannabis use more broadly are associated with initiation of tobacco products.

Introduction

National estimates suggest that co-use of cannabis and tobacco among adolescents is common.[1] According to one estimate from 2013-2014, 5.4% of adolescents surveyed were past month co-users.[2] Of these, 85.5% reported any past month use of blunts (hollowed out cigars [eg, cigarillos or little cigars] where the shredded tobacco

filling has been replaced with cannabis, while the nicotine-containing tobacco-leaf casing is retained[3]), and 34.1% reported using blunts as their only form of co-administration in the past month.[2] Blunt use among adolescents and youth is concerning because it exposes the user to both cannabis and nicotine, and adolescence is a critical period in neurological development and a high-risk period for developing nicotine dependence.[4] Blunt use is associated with concurrent use of cigarettes, cigars, and e-cigarettes among adolescents,[3,5] and, compared to those who smoke cannabis in other forms (eg, joints, pipes), blunt users are more likely to be concurrently dependent on tobacco.[6]

The longitudinal relationship between cannabis use and combustible tobacco product use is relatively well characterized; evidence supports a bi-directional relationship, where cannabis use is associated with increased initiation of tobacco use and dependence, and tobacco use is associated with increased initiation and persistence of cannabis use.[7–9] However, the longitudinal relationship between blunt use and use of other tobacco products has not been well-established. A recent systematic review[10] identified only one prospective cohort study of blunt use and subsequent cigarette use.[11] It found that prior blunt use was associated with nicotine dependence among adolescent cigarette smokers. However, whether adolescent blunt users who were otherwise naïve to combustible tobacco-only products (ie, cigarettes, cigars, and cigarillos) are more likely to initiate use of these products is still unknown. Blunt use could influence an adolescent's likelihood of initiating combustible tobacco products directly, through exposure to nicotine in the product itself, or indirectly, through the route of administration (eg, by habituating users to the experience of inhaling smoke) or social mechanisms (eg, through social pressures or through blunt use–associated behaviors like "blunt chasing"). In addition, any of these influences could be exacerbated or attenuated for adolescents who are already exposed to nicotine through use of other tobacco products, such as e-cigarettes or hookah.

We sought to assess whether blunt use and non-blunt cannabis use were associated with increased odds of trying a combustible tobacco-only product (ie, cigarettes, cigars, and cigarillos) by 1-year follow-up among adolescent never combustible tobacco product users at baseline. We also sought to explore whether estimates differed for adolescents who had (vs. had not) tried another tobacco product (ie, e-cigarettes or hookah) at baseline.

Methods

Participants

We pooled data from two school-based prospective cohort studies of adolescents: the Happiness & Health Study (H&H) in California and the Yale Adolescent Survey Study (YASS) in Connecticut (combined N = 4594). Study designs for H&H[12] and YASS[13] have been described previously. Baseline data used in these analyses were from the spring of 2014 (9th grade), and follow-up data were from the spring of 2015 (10th grade; N = 3190) for H&H; baseline data for YASS were from the fall of 2013 (9th–12th grades), and follow-up data were from the spring of 2014 (ie, from the same academic year; N = 1404). Additional information about the study design of H&H and YASS can be found in the Supplementary Methods.

Measures

Blunt or Other Cannabis Use

Ever use of blunts and non-blunt cannabis were assessed at baseline. To adjust for use of non-blunt cannabis, we created a baseline blunt use variable with three categories: ever use of blunts, ever use of non-blunt cannabis only, and never use of cannabis. Participants were classified as ever blunt users if they responded "yes" to a question asking if they had ever tried a blunt. In YASS, a blunt was described as "a cigar with marijuana in it." In H&H, a blunt was described as "marijuana rolled in tobacco leaf or cigar casing." Participants who had not reported using blunts were classified as non-blunt cannabis users if they responded that they had ever used marijuana or hashish.

Other Tobacco Use

Similar questions were used to assess ever use of cigars (including cigarillos or little cigars), e-cigarettes, and hookah in both studies and to assess cigarette use in H&H. For YASS, ever cigarette use was determined based on an age of onset question (where those reporting any age of onset were considered ever cigarette users).

Sociodemographic Variables

Covariates included school grade at baseline (9th, 10th, 11th, or 12th grade), gender (male, female), race/ethnicity (White, Black, Hispanic, Asian, bi-/multi-racial, other), and study site (H&H, YASS). In addition, YASS participants completed the Family Affluence Scale II, a four-item measure of socioeconomic status.[14] The Family Affluence Scale II index scores were created and categorized to create three levels of family affluence: low, medium, and high.[15]

Data Analysis

All analyses were restricted to adolescents who reported having never tried a combustible tobacco product (either cigarettes or cigars) at baseline. Logistic regression models were used to evaluate the association of self-reported blunt use and non-blunt cannabis use (vs. no cannabis use) at baseline with initiation of any combustible tobacco product at follow-up, after adjusting for sociodemographic covariates. We included product interaction terms to investigate whether effect estimates differed significantly between ever and never users of e-cigarettes or hookah (in separate models). We also examined whether effect estimates differed significantly by study site by including a product interaction term for the blunt and non-blunt cannabis use variable and study site. Sensitivity analyses were conducted using YASS data and socioeconomic status; no meaningful differences in any effect estimates were observed. Statistical analyses were conducted using SAS 9.4.

Results

Among participants with no reported history of combustible tobacco use (N = 2973; 64.7% of the total sample), 7.4% (n = 221) reported having tried a blunt and 3.8% (n = 114) reported having tried only non-blunt cannabis at baseline. Of those who had tried a blunt, 24.9% (n = 55) of these adolescents reported trying a combustible tobacco-only product by follow-up, compared to 21.2% (n = 24) of non-blunt cannabis users, and 5.6% (n = 147) of those who had not tried any cannabis at baseline. For a complete breakdown of demographic and tobacco use characteristics, see Table 1. Unadjusted associations between demographic and tobacco use characteristics and self-reported combustible tobacco-only product initiation are provided in Supplementary Table 1. After adjustment for covariates, ever blunt users (adjusted odds ratio [AOR] = 1.98, 95% confidence interval [CI]: 1.30 to 3.01) and ever non-blunt cannabis-only users (AOR = 2.38, 95% CI: 1.41 to 4.00) had significantly greater odds of trying a combustible tobacco-only product between baseline and

Table 1. Sample Characteristics of Never Combustible Tobacco Product Users at Baseline and the Association Between Blunt/Non-Blunt Cannabis Use at Baseline and Subsequent Trying a Combustible Tobacco Product at Follow-up (*N* = 2973)

		Combustible tobacco use at follow-up[1]		
Baseline characteristics	Total (*N* = 2973) *n* (col %)	No (*n* = 2747, 92.4%) *n* (row %)[2]	Yes (*n* = 226, 7.6%) *n* (row %)[2]	Adjusted odds ratio (95% confidence interval)[3]
Ever blunt/cannabis use				
Ever blunt use	221 (7.4)	166 (75.1)	55 (24.9)	1.98 (1.30 to 3.01)*
Ever non-blunt cannabis use	114 (3.8)	90 (79.0)	24 (21.1)	2.38 (1.41 to 4.00)*
No	2638 (88.7)	2491 (94.4)	147 (5.6)	Ref.
Ever e-cigarette use				
Yes	491 (16.5)	394 (80.2)	97 (19.8)	1.80 (1.27 to 2.56)*
No	2482 (83.5)	2353 (94.8)	129 (5.2)	Ref.
Ever hookah use				
Yes	464 (15.6)	352 (75.9)	112 (24.1)	4.37 (3.08 to 6.20)*
No	2509 (84.4)	2395 (95.5)	114 (4.5)	Ref.
Baseline grade level				
9	2468 (83.0)	2286 (92.6)	182 (7.4)	Ref.
10	224 (7.5)	207 (92.4)	17 (7.6)	1.97 (0.78 to 4.96)
11	160 (5.4)	143 (89.4)	17 (10.6)	2.30 (0.90 to 5.87)
12	121 (4.1)	111 (91.7)	10 (8.3)	1.78 (0.64 to 4.97)
Gender				
Male	1289 (43.4)	1181 (91.6)	108 (8.4)	1.34 (1.01 to 1.80)*
Female	1684 (56.6)	1566 (93.0)	118 (7.0)	Ref.
Race/ethnicity				
Non-Hispanic White	993 (33.4)	921 (92.8)	72 (7.3)	Ref.
Hispanic	1080 (36.3)	989 (91.6)	91 (8.4)	0.84 (0.54 to 1.30)
Other	900 (30.3)	837 (93.0)	63 (7.0)	0.95 (0.61 to 1.48)
Non-Hispanic Black	98 (3.3)	87 (88.8)	11 (11.2)	—
Asian	469 (15.8)	447 (95.3)	22 (4.7)	—
Other, including bi- and multi-racial	333 (11.2)	303 (91.0)	30 (9.0)	—
Study				
H&H	2256 (75.9)	2081 (92.2)	175 (7.8)	1.45 (0.62 to 3.37)
YASS	717 (24.1)	666 (92.9)	51 (7.1)	Ref.

H&H = Happiness & Health Study; YASS = Yale Adolescent Survey Study.

[1]Combustible tobacco-only products included cigarettes, cigars, and cigarillos.

[2]Percentages may not sum to 100 due to rounding.

[3]Odds ratios are adjusted for baseline measures of ever blunt/cannabis use, ever e-cigarette use, ever hookah use, baseline grade level (9th–12th), gender, race/ethnicity (White, Hispanic, Other), and study (H&H, YASS).

*Statistically significant associations ($p \leq .05$).

follow-up, relative to never cannabis users. Effect estimates did not differ significantly by study (*p*-for-interaction = .37).

Effect estimates differed significantly by both e-cigarette use (*p*-for-interaction = .01) and hookah use status (*p*-for-interaction < .01; Table 2). Among those who reported having never tried e-cigarettes at baseline (*n* = 2482), blunt use (AOR = 3.86, 95% CI: 2.11 to 7.05) and non-blunt cannabis use (AOR = 3.25, 95% CI: 1.59 to 6.66) (vs. no cannabis use) were significantly associated with reporting combustible tobacco product initiation by follow-up. Among those who reported having never tried hookah by baseline (*n* = 2509), blunt use (AOR = 5.04, 95% CI: 2.77 to 9.19) and non-blunt cannabis use (AOR = 4.13, 95% CI: 2.05 to 8.32) (vs. no cannabis use) were significantly associated with reporting combustible tobacco product initiation by follow-up. Among those who reported having ever used e-cigarettes or hookah, there was no significant association between blunt use or non-blunt cannabis use and subsequent combustible tobacco product initiation. Notably, the odds of combustible tobacco product initiation for ever e-cigarette users who had either used or not used blunts were higher than for those who had never used blunts or e-cigarettes; similar results were observed for hookah (see Supplementary Table 2 for the simple and joint effects from each interaction).

Discussion

Our results show that adolescents who reported blunt and non-blunt cannabis use had greater odds of subsequently initiating combustible tobacco product use, and that the odds of subsequent combustible tobacco product initiation were greater for those who reported no e-cigarette use or hookah use at baseline. Taken together, our findings support previous research indicating that cannabis use may promote subsequent tobacco product initiation. Further, these findings expand upon that body of literature to include cannabis use in the form of blunts.

Although the association of blunt and non-blunt cannabis use with combustible tobacco initiation may be due, at least in part, to shared underlying risk factors between cannabis use and combustible tobacco product use, research has identified other mechanisms

Table 2. Association of Baseline Ever Blunt/Non-Blunt Cannabis Use With Subsequent Combustible Tobacco-Only Product Use, Stratified by Baseline e-cigarette and Hookah Use

	Never baseline e-cigarette/hookah users			Baseline e-cigarette/hookah users		
	Combustible tobacco-only product use at follow-up			Combustible tobacco-only product use at follow-up		
	No *n* (%)[1]	Yes *n* (%)[1]	Odds ratio[2] (95% CI)	No *n* (%)[1]	Yes *n* (%)[1]	Odds ratio[3] (95% CI)
E-cigarettes[4]						
Blunt use	61 (76.3)	19 (23.8)	3.86 (2.11 to 7.05)*	105 (74.5)	36 (25.5)	1.26 (0.75 to 2.11)
Non-blunt cannabis use	51 (82.3)	11 (17.7)	3.25 (1.59 to 6.66)*	39 (75.0)	13 (25.0)	1.59 (0.76 to 3.30)
No cannabis use	2241 (95.8)	99 (4.2)	Ref.	250 (83.9)	48 (16.1)	Ref.
Hookah[5]						
Blunt use	71 (79.8)	18 (20.2)	5.04 (2.77 to 9.19)*	95 (72.0)	37 (28.0)	1.16 (0.71 to 1.91)
Non-blunt cannabis use	58 (84.1)	11 (15.9)	4.13 (2.05 to 8.32)*	32 (71.1)	13 (28.9)	1.35 (0.66 to 2.75)
No cannabis use	2266 (96.4)	85 (3.6)	Ref.	225 (78.4)	62 (21.6)	Ref.

[1]Percentages are row percentages within strata. Percentages may not sum to 100 due to rounding.

[2]Odds ratios are for the effect of blunt/non-blunt cannabis use on combustible tobacco product use among never e-cigarette users (top) or never hookah users (bottom).

[3]Odds ratios are for the effect of blunt/non-blunt cannabis use on combustible tobacco product use among ever e-cigarette users (top) or ever hookah users (bottom).

[4]Odds ratios are adjusted for gender, race/ethnicity, grade, study, and ever hookah use at baseline. p for interaction = .0125.

[5]Odds ratios are adjusted for gender, race/ethnicity, grade, study, and ever e-cigarette use at baseline. p for interaction = .0002.

that could support these findings. Blunt or non-blunt cannabis use could expose adolescents to tobacco through social mechanisms. Several studies have shown that blunts are used in social settings more often than cannabis in other forms.[16–18] By seeing others partake in common co-use behaviors such as "blunt chasing," where a user smokes a cigarette or cigar product directly after a blunt,[19] tobacco-naïve individuals may experience social pressure and thus be at greater risk for combustible tobacco product initiation. Alternatively, youth using blunt or non-blunt cannabis may habituate to the experience and sensation of inhaling smoke from combusted products and may be more willing to experiment with other combusted products. For adolescents who use cannabis but who are not necessarily interested in using tobacco products, blunt use may be an important risk factor for subsequent tobacco use because it introduces the user to nicotine via the nicotine-containing casing. However, we found similar effects for both blunt and non-blunt cannabis use with subsequent combustible tobacco product initiation, suggesting that nicotine is likely playing a lesser role in the risk of future tobacco use initiation than the behavioral mechanisms described above, which are applicable to both blunt and non-blunt cannabis use. More research is needed to understand how blunt use, compared to use of cannabis in other forms, is associated with tobacco-only product initiation.

We observed that adolescents who had not reported trying other nicotine products had significantly increased odds of initiating cigarettes or cigars, but those who had tried other products did not. It is possible that users of other products have greater exposure to substance use whereby use of blunts or non-blunt cannabis may play a lesser role in experimentation with other products. Similar findings have been observed for studies of the association of e-cigarette use with subsequent cigarette initiation, where negligible risk is observed for high-risk youth who report use of other tobacco products.[20]

In addition to the novel nature of our research questions, strengths of this study include the prospective analysis and larger sample size afforded by combining two studies. In addition, the study samples are from very different regions of the United States, comprising a relatively diverse group of adolescents. Despite this, there remain limitations to our work. Information on several factors (eg, depressive symptoms, impulsivity, and susceptibility) was collected differently for each study, and so these variables were excluded from our analyses. Further, relatively few participants identified as non-Hispanic Black. Individuals of non-Hispanic Black race/ethnicity are more likely to use cannabis in blunt form, which may affect the generalizability of our findings.[1] In addition, future studies should include larger sample sizes and longer follow-up periods to promote greater precision and provide greater insight into transitions between products.

Our results indicate that cannabis use is associated with increased risk of combustible tobacco-only product initiation (ie, cigarettes, cigars, or cigarillos). Uniquely, we also observed that blunt use was associated with initiating combustible tobacco product use. Given that adolescents who use blunts may consider the cigar casing as merely a delivery device—similar to a bong, pipe, or joint paper—and may not necessarily be interested in using tobacco in addition to cannabis, blunt use may serve as an important and viable target for preventing combustible tobacco-only product use. Tobacco prevention campaigns targeting adolescents should consider incorporating cannabis products, including blunts.

Supplementary Material

Supplementary data are available at *Nicotine and Tobacco Research* online.

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Declaration of Interests

None of the authors has any conflicts of interest to declare.

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