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Tobacco Use Insights

Psychosocial and Behavioral Characteristics Among Subgroups of Nondaily College Student Smokers

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ABSTRACT: Nondaily smoking is becoming common in young adults and there appear to be different characteristics associated with past month smoking frequency among nondaily smokers. The present study examines behavioral and psychosocial correlates of smoking among subgroups of nondaily college student smokers ($N = 80$; 18–25 years of age) attending a large, public university. Nondaily smokers were categorized based on the frequency of days smoked in the past month and were divided into two subgroups: 1–5 days and 6–29 days. A quarter of nondaily smokers considered themselves as a smoker and significantly more 6–29 nondaily smokers were identified as a smoker and smoked more cigarettes per day (CPD). Almost half (45%) of nondaily smokers have attempted to quit smoking completely and 71% of the 6–29 nondaily smokers reported significantly higher quit attempts. The 6–29 nondaily smokers had significantly higher perceived risk related to smoking. Self-efficacy to abstain from smoking was significantly higher for 1–5 nondaily smokers. These results suggest heterogeneity among subgroups of nondaily college student smokers exists in a number of behavioral and psychosocial factors. Prevention and cessation strategies may be improved by considering frequency of nondaily smoking and targeting subgroups differently.

KEYWORDS: tobacco, smoking, nondaily smoking, young adults, college students

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Introduction

Tobacco is the leading cause of preventable death and chronic disease in the United States.[1] Despite advances in tobacco control and prevention, smoking among younger adults (18–25 years of age) has remained relatively stable at 18.5% and has declined only by 1% since 2008.[2] Lighter (less cigarettes per day (CPD)) and nondaily smoking is becoming more prevalent compared to daily smoking.[3,4] Nondaily smoking has traditionally been defined as smoking on 1–29 days in the past 30 days and is a common smoking pattern among young adults.[5] Nondaily smoking is associated with negative acute respiratory health outcomes, such as persistent coughing and shortness of breath, in addition to increased risk of premature morbidity and mortality compared to nonsmokers.[6,7]

Among young adults, college students tend to be light smokers with nondaily smoking patterns.[8] College students primarily smoke in a social context, with cigarettes as the main source of tobacco consumption.[9–11] The characteristics of nondaily smoking college students appear to be similar to social smokers in that they are less dependent on nicotine, possess little intention to quit, and lack perceived risk for smoking-related disease.[9] Recent research has identified nondaily smoking as a possible stable pattern of cigarette consumption rather than only a transitory phase to or from daily smoking.[11–14] Often, past research has classified nondaily smokers homogenously as those who smoke less than 30 days in the past month or those who do not smoke everyday.[15] However, there appears to be possible differences in characteristics among past month

smoking frequency in nondaily smokers.[14] While less is known about the subgroups of nondaily smokers smoking at varying frequency levels compared to daily smokers, preliminary evidence suggests that heterogeneity exists.[5,16,17]

A need exists to examine characteristics and variability among nondaily smokers by frequency of smoking in the past month, and to the best of our knowledge, few studies have done so.[14,16,17] Nondaily smoking has been primarily examined as a transitory phase to stable smoking and needs to be investigated as its own smoking status to understand behavioral characteristics of nondaily smokers to better inform prevention and cessation efforts. The goal of this paper is to examine behavioral and psychosocial factors associated with smoking among subgroups of ethnically diverse nondaily smokers.

Methods

The parent study was a cross-sectional survey and was conducted at a large southern California university in Fall 2009 among undergraduate students in multiple classes ($N = 490$). This study focuses on a subset of students who were classified as nondaily smokers ($N = 80$). Researchers contacted instructors at the university for permission to recruit participants from their courses. The participants were recruited in-person during class time, and offered a pen for their participation. All participants completed a paper and pencil survey. Students were required to be at least 18–25 years of age to participate. Reflecting the demographic characteristics of the university, 29% of the participants were White, 28% Latino, 26% Asian/Pacific Islander, and 17% from other or multiple racial categories. Most participants were single (95%), 96% lived off campus, and 28% were involved in organized clubs that included sororities, fraternities, and honors/academics. Before participation, informed consent was obtained and research was approved by the University Institutional Review Board.

Smoking history and behavior were assessed using items and wording from national instruments and based on recommendations from past research.[1,18] Participants were asked if they smoked in the past 30 days and if so on how many days (1–2, 3–5, 6–9, 10–19, or 20–29).[19] In addition, we asked questions related to identity, "Do you consider yourself a smoker," "Do you consider yourself a social smoker" and quit intention and attempts, "Do you ever intend to completely quit smoking" and "Have you ever tried to quit smoking cigarettes." Risk perceptions related to smoking were assessed by rating the degree of perceived risk on an 11-point scale (0 = no risk and 10 = high risk) using three items: perceived risk of developing a smoking-related disease, becoming addicted to smoking, and difficulty in quitting smoking. Internal consistency was high across the three risk items (Cronbach's $\alpha = 0.84$). Nicotine dependence was assessed using the Fagerström Test for Nicotine Dependence (FTND).[20]

Participants were asked to identify locations where they primarily smoke (eg friend's houses and parties) and the main reasons they smoke (eg, when drinking or drunk and to socialize) from a list, checking all that applied. Self-efficacy to resist smoking was assessed using a 17-item scale rated from 1 to 10 adapted from the existing measures, with higher scores indicating higher resistance self-efficacy or degree of confidence to abstain from smoking cigarettes in a variety of situations.[21,22] Internal consistency of the developed scale was high (Cronbach's $\alpha = 0.96$). Perceptions of smoking were assessed with seven items on a Likert scale adapted from the existing scales, focusing on perceptions of pressures to not smoke (Cronbach's $\alpha = 0.79$) and perceptions of the benefits of smoking (Cronbach's $\alpha = 0.86$).[23]

Results

All data were analyzed using SPSS version 20.0. Nondaily smokers were categorized based on responding yes to "ever tried cigarette smoking," smoked in the past 30 days, and reported smoking on 1–29 days in the past 30 days. Out of the sample, we identified 80 non-daily smokers (smoked on 1–29 days per month); the majority were female (52%), and the mean age was 21. Using methods similar to national college health surveys and for empirical reasons based on the sample distribution, nondaily smokers were further categorized based on ranges of days smoked in the past 30 days: 1–5 days and 6–29 days. These data were collapsed based on the distribution of responses to allow comparison between very low and higher frequency nondaily smoking groups.[19,24]

Smoking history, behavior, and identity. In terms of the number of CPD smoked, the 6–29 nondaily smokers reported smoking significantly more CPD compared to the 1–5 nondaily smokers ($\chi^2 = 14.30$, $df = 4$, $P < 0.01$). A quarter of nondaily smokers considered themselves a smoker and 64% a social smoker, with significantly more 6–29 nondaily smokers identified as a smoker ($\chi^2 = 24.16$, $df = 1$, $P < 0.001$). Most (69%) nondaily smokers reported smoking only in social situations compared to mainly alone or alone and with others; in addition, this was significantly higher among the 1–5 nondaily smokers (86%) compared to 6–29 nondaily smokers (33%) ($\chi^2 = 20.53$, $df = 1$, $P < 0.001$).

Quit history and intention. Three-quarters of nondaily smokers reported they intend to quit smoking completely. A majority (81%) of nondaily smokers reported they could quit smoking at anytime, with 1–5 nondaily smokers (91%) having significantly higher confidence to quit compared to 6–29 nondaily smokers (67%) ($\chi^2 = 7.05$, $df = 2$, $P < 0.05$). Of the 45% of the sample who reported they attempted to quit smoking completely, significantly more 6–29 nondaily smokers (71%) reported higher quit attempts compared to 1–5 nondaily smokers (38%) ($\chi^2 = 7.06$, $df = 1$, $P < 0.01$). Overall 41% of nondaily smokers intend to smoke in the next 30 days, and 6–29 nondaily smokers reported significantly higher intention to smoke in the next 30 days (64%) than 1–5 nondaily smokers (33%) ($\chi^2 = 6.28$, $df = 1$, $P < 0.01$).

Perceived risk and dependence. The majority (90%) of nondaily smokers reported that they were able to abstain from

smoking for 24 h, and zero participants reported yes to ever feeling like having a cigarette first thing in the morning, a key indicator of tobacco addiction. Most nondaily smokers (82%) scored zero on the FTND, and there were no significant differences between 6–29 nondaily smokers and those smoking 1–5 days a month. There were significant differences among nondaily smoking frequency subgroups for each of the three perceived risk items. The 6–29 nondaily smokers compared to 1–5 nondaily smokers were significantly more likely to report higher perceived risk for developing a smoking-related disease, $t(75) = 3.56$, $P < 0.001$; becoming addicted to smoking; $t(75) = 3.91$, $P < 0.001$; and finding difficult to quit smoking, $t(75) = 2.59$, $P < 0.05$ (see Table 1).

Self-efficacy, perceptions, and reasons for smoking. Resistance self-efficacy was significantly higher for 1–5 nondaily smokers compared to 6–29 nondaily smokers, $t(77) = 4.23$, $P < 0.001$. The 6–29 nondaily smokers reported a significantly higher mean of perceived benefits of smoking than did the 1–5 nondaily smokers, $t(76) = 3.71$, $P < 0.001$ (see Table 1). No differences were found in perceived social pressure (see Table 1). When asked the reasons for smoking, the top three reported reasons such as when drinking or drunk (61%), stressed or anxious (54%), and to socialize (49%). Of all reasons reported for smoking, the 6–29 nondaily smokers reported when stressed or anxious ($\chi^2 = 6.75$, $df = 1$, $P < 0.01$) and to relax ($\chi^2 = 8.19$, $df = 1$, $P < 0.00$) significantly more often compared to the 1–5 nondaily smokers. There were no significant differences between the two groups of nondaily smoking frequencies on locations where they smoke; however, most (64%) smoke at parties, followed by friends' houses (50%) and bars (45%).

Discussion

Given the growth of nondaily smoking in the United States, this study investigated heterogeneity among subgroups of nondaily smokers (1–5 vs. 6–29 smoking days per month) on smoking behavior and related psychosocial factors.[3] Nondaily smoker subgroups share common characteristics in that they mainly self-identify as social smokers, smoke in social situations, and have a high intention to smoke in the next 30 days. Consistent with the previous findings, many of our participants do not self-identify as smokers but as social smokers.[24] Self-identification as a smoker was higher among 6–29 nondaily smokers, suggesting smoking frequency may be related to smoker identity.

Almost all nondaily smokers (81%) reported they could quit smoking at any time and intend to quit smoking completely (75%). Despite reported intention to quit and high confidence in their ability to quit smoking, roughly half of nondaily smokers reported actually making a quit attempt. Interestingly, the 6–29 nondaily smokers reported making significantly more attempts than 1–5 nondaily smokers, suggesting a possible connection to frequency of smoking and attempting to actually quit. These findings are consistent with other studies that found college students do attempt to quit smoking, but most attempts are unsuccessful, without any conclusion as to why they fail to quit smoking.[18,25,26]

The significant majority of nondaily smokers did not report symptoms of physical dependence or addiction to nicotine regardless of their smoking frequency, which is consistent with past research.[4,10] More than half of nondaily smokers scored very low on the FTND, indicating that traditional measures of dependence may not be appropriate for nondaily smokers, regardless of smoking frequency. Recently, it has been suggested that nicotine dependence should be measured beyond withdrawal to examine psychological dependence and behavioral cues of smoking.[27] Doing so may help to explain why seemingly non-nicotine-dependent nondaily smokers continue to smoke despite having high intention to quit and make quit attempts.

Interestingly, 6–29 nondaily smokers had a higher perceived risk for difficulty in quitting, becoming addicted to smoking, and developing a smoking-related disease. Although these findings are in contrast to other findings that college

Table 1. Differences by smoking frequency subgroups.

VARIABLE	SMOKING FREQUENCY IN PAST 30 DAYS		*t*	*p*
	1–5 DAYS	6–29 DAYS		
	n = 58 *M(SD)*	*n* = 22 *M(SD)*		
Perceived risk of smoking disease[a]	2.95 (2.88)	5.50 (2.82)	$t(75) = 3.56$	<0.001
Perceived risk of addiction[a]	1.73 (2.44)	4.23 (2.75)	$t(75) = 3.91$	<0.001
Perceived difficulty in quitting[a]	2.00 (2.80)	3.86 (2.98)	$t(75) = 2.59$	<0.05
Resistance self-efficacy[b]	7.80 (1.68)	6.01 (1.68)	$t(77) = 4.23$	<0.001
Perceived benefits[c]	3.30 (1.38)	4.56 (1.24)	$t(76) = 3.71$	<0.001
Perceived social pressure[c]	3.40 (1.31)	3.97 (1.11)	$t(76) = 1.80$	0.07

Notes: [a]11-point scale (0 = no risk to 10 = high risk). [b]17-items rated 1 to 10 with higher scores indicating higher resistant self-efficacy. [c]Likert-scale (1 = strongly disagree to 6 = strongly agree).

students do not perceive, they are harming themselves by engaging in infrequent bouts of smoking; this indicates that frequency of smoking may relate to risk perceptions.[28,29] No differences were found between perceived pressures to quit smoking, although 6–29 nondaily smokers reported higher perceived benefits for smoking. Resistance self-efficacy was high for 1–5 nondaily smokers, and there may be a relationship between frequency of smoking and confidence in refusing to smoke in various situations.

Nondaily smokers report primary reasons for smoking when drinking or drunk, stressed or anxious, and to socialize, which is similar to other studies that found drinking alcohol is associated with cigarette smoking.[16,30] Notably, 6–29 nondaily smokers reported significantly more smoking when stressed or anxious than 1–5 nondaily smokers. Although no differences were found among subgroups of nondaily smokers for locations where they smoked, they primarily smoke at parties, friend's houses, and bars, which coincides with other studies that smoking among college students parallels social activities and that low-level smokers smoke to structure social situations and aid social interaction.[29,31]

Prevention and intervention efforts should extend beyond traditional strategies such as in clinics or through mass campaigns and be placed in a variety of settings including the social context. For example, prevention programs should include health education that takes place in the social environment when smoking is most likely to occur or offer cessation programs online.[9–11,32] Efforts to decrease perceived benefits of smoking, and increase knowledge of the acute health consequences of smoking and consequences of secondhand smoke exposure to nonsmokers may be more effective in deterring nondaily smoking.[32] In addition, it appears that nondaily smokers may smoke to manage stress, anxiety, and perhaps other emotions; therefore, emotional coping skills should be included as part of any prevention and intervention measures.[8]

Furthermore, screening for smoking needs to include questions that capture nondaily smokers who will answer no to smoker identity questions, such as "Do you consider yourself a smoker."[8] The issue of traditional screening for nicotine dependence needs to be further explored because nondaily smokers will most likely score low on standard dependence measures with some not meeting the qualifications for low to moderate dependence. However, promising markers for cessation of smoking among nondaily smokers include their belief they can quit smoking and their previous quit attempts, signaling they are not only thinking about quitting but actually have attempted to do so. Theoretical frameworks (eg stages of change theory) should be the underpinning for future research and programmatic efforts among nondaily smokers to help further understand the best practices of prevention and cessation in this population.

Limitations

The current study is limited by not knowing the previous smoking history of participants, specifically, whether they were always a nondaily smoker or whether they had been a daily smoker at one time. However, the goal of this study was to examine the current nondaily smokers. Because the study design was cross-sectional causal inferences, the relationship of the psychosocial variables to smoking behavior cannot be drawn. In addition, caution must be used in generalizing results to all college students or nondaily smokers because of the small sample size. Future research should include a large random sample to examine nondaily smokers.

Conclusions

Heterogeneity among subgroups of nondaily smokers exists in a number of behavioral and psychosocial factors associated with smoking, although both patterns of consumption carry significant health risks. Prevention and cessation strategies that do not focus on traditional methods (eg health messages or nicotine replacement therapy) may be improved by considering frequency of nondaily smoking rather than treating nondaily smokers as a homogenous group.

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Author Contributions

Conceived and designed the experiments: DRR. Analyzed the data: DRR and KP. Wrote the first draft of the manuscript: DRR and KP. Contributed to the writing of the manuscript: DRR, KP, TSS, JSA. Agree with manuscript results and conclusions: DRR, KP, TSS, JSA. Jointly developed the structure and arguments for the paper: DRR, KP, TSS, JSA. Made critical revisions and approved the final version: DRR. All authors reviewed and approved of the final manuscript.

DISCLOSURES AND ETHICS

As a requirement of publication the authors have provided signed confirmation of their compliance with ethical and legal obligations including but not limited to compliance with ICMJE authorship and competing interests guidelines, that the article is neither under consideration for publication nor published elsewhere, of their compliance with legal and ethical guidelines concerning human and animal research participants (if applicable), and that permission has been obtained for reproduction of any copyrighted material. This article was subject to blind, independent, expert peer review. The reviewers reported no competing interests.

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