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Factors Associated with Perceptions of Hookah Addictiveness and Harmfulness Among Young Adults

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Introduction

Hookah smoking is a form of tobacco use that is growing in popularity in the United States.¹ College aged students, who are known to experiment with multiple forms of tobacco, are particularly vulnerable to this tobacco trend.² Current studies estimate from 15 to 60% of college students and young adults have smoked hookah in their lifetime, which is similar to lifetime cigarette use in this population.^{1, 3-4}

There is a common misconception that hookah smoking is not as dangerous as other forms of tobacco which may help explain the recent uptake of hookah, especially among young adults. However, recent research suggests that, much like cigarette smoking, hookah smoking is associated with adverse health effects including various cancers and respiratory illnesses and that hookah smoking may be as addictive as cigarette smoking.⁵⁻⁶ In a recent meta-analysis looking at nicotine exposure from hookah smoking, daily hookah smokers produced cotinine levels that were similar to smoking ten cigarettes a day and non-daily hookah smokers produced cotinine levels similar to smoking two cigarettes a day, suggesting that hookah smoking may lead to nicotine dependence.⁵

Many studies have included survey questions about perceived harmfulness of hookah use. In general, most young adults perceive hookah smoking to be less harmful than other forms of tobacco.^{1, 3-4, 7} Fewer studies have included survey questions about perceived addictiveness of hookah smoking. Available data suggest that many college students and young adults do believe that hookah smoking is less addictive than other tobacco products.^{3-4, 7}

Although existing studies have included survey questions capturing perceptions of hookah smoking, only one study of which we are aware has examined factors associated with perceptions of hookah smoking harmfulness (although it did not measure perceived addictiveness). In that study, the majority of adult hookah users surveyed in a west-coast cafe, believed that hookah smoking was less dangerous than regular cigarettes.⁸ Those of Asian descent and more frequent users of hookah were more likely to believe the hookah smoking was less harmful than cigarette smoking.⁸

The relationship between perceptions of hookah harm and addictiveness and demographic and tobacco use habits remains unclear in the young adult and college student population. Therefore, the purpose of the current study was to extend previous work to examine factors associated with perceived harm and perceived addictiveness of hookah smoking among young adult college attenders. This information will be useful when developing prevention programs for hookah use aimed at decreasing misconceptions and increasing the awareness of health risks surrounding this type of tobacco use with the ultimate goal of reducing nicotine addiction in an at-risk population.

Method

Participants

Participants were undergraduate college students and graduates ($N=241$; 54% women) who were screened in to the Spring Break Behavior and Health (SBBH) study through the Student Life Survey (SLS), a biennial survey with a random sample of undergraduate students at a large Midwestern university.⁹ In 2011, the SLS drew a random sample of 3,000 students from the Registrar's Office with a 47% response rate. Based on data provided by students in the SLS, eligible students were invited into the SBBH study. Eligible SBBH students ($N=320$; 23% of SLLS participants): (a) were between the ages of 18 and 21 (86% of the SLLS sample), (b) planned to go on a Spring Break trip with their friends (29%), and (c) were willing to be re-contacted by researchers (86%). Eligible students were mailed a pre-notification letter and emailed a secure link to the Wave 1 SBBH survey. All surveys were web-based. The Wave 1 survey occurred just prior to Spring Break, Wave 2 was immediately after Spring Break, and Wave 3 was six months later (the following fall). All procedures were approved by the university's Institutional Review Board.

SBBH was designed to test the efficacy of a brief personalized feedback intervention to reduce high-risk alcohol and sexual behaviors during Spring Break. Students were randomly assigned to either the intervention (online personalized feedback) or control group. Both groups completed all surveys. Main intervention findings are available elsewhere, and the intervention is included as a control variable in the present analyses.

Of the 320 SBBH-eligible students contacted, 270 (84.4% response rate) completed the Wave 1 survey. At Wave 3, 241 students (89.3% retention rate) completed the survey. The sample was 78.2% White, 18.1% Asian, 4.8% Black, 2.6% Hispanic, 1.1% American Indian/Alaska Native, and 3.0% Other (with multiple race/ethnicities checkable).

Measures

Demographic variables measured at Wave 1 included age, gender, race (coded as White, Asian, or Other), and intervention (=1, control group=0). At Wave 3, students were asked their current year in school (sophomore, junior, senior, fifth year, graduated, or other) and whether they were members of a fraternity or sorority (1=yes, 0=no).

Cigarette use and hookah or shisha use in the past 3 months were measured at Wave 3 and coded as 1=any use, 0= no use.

Perceptions of hookah were also measured at Wave 3. Participants were asked two questions. First, "Compared to a regular cigarette, how *harmful* do you think shisha (flavored tobacco smoked in a hookah/waterpipe) is?" Second, "Compared to a regular cigarette, how *addictive* do you think shisha (flavored tobacco smoked in a hookah/waterpipe) is?" Responses were coded as 1=less harmful/addictive than cigarettes, 0=same/more harmful/addictive than cigarettes.¹⁰

Data Analysis

Descriptive statistics were calculated for the demographic, tobacco use, and hookah perception variables. Chi-square analyses were used to compare demographic and tobacco use variables based on perceptions of hookah harmfulness and hookah addictiveness. Logistic regression models were used to predict having risky perceptions of hookah harmfulness and addictiveness (i.e., perceiving hookah to be less harmful or less addictive than cigarettes) by demographic variables and hookah use. Supplementary models were tested with cigarette use in place of hookah use (they were not entered together because of collinearity [$r_{\text{hookah and cigarette use}} = .41, p < .001$]).

Results

Overall, 58.9% of the sample perceived hookah to be less addictive than cigarette smoking and 31.5% of the sample perceived it to be less harmful than cigarette smoking. Students who perceived hookah smoking to be less harmful than cigarette smoking tended to be older ($M (SD) = 21.1 (1.1)$ vs. $M (SD) = 20.8 (1.1)$, $p < .05$) and were less likely to smoke cigarettes (13% vs. 27%, $p < .05$). Students who perceived hookah smoking to be less addictive than cigarette smoking were more likely to have smoked hookah in the past three months (32% vs. 11%, $p < .001$).

Multivariate Analysis

Predictors of having perceptions that hookah smoking is less addictive than cigarette smoking included year in school and smoking hookah in the past three months. Older students were more likely to perceive hookah as less addictive than cigarettes. In particular, juniors had more than two times the odds of perceiving hookah smoking as less addictive compared to sophomore students ($OR = 2.97, p < .05$). Recent college graduates trended towards having higher odds of perceiving hookah as less addictive compared to sophomore students ($OR = 2.32, p < .10$). Students who had smoked hookah in the past three months had almost two times the odds of perceiving hookah smoking as less addictive than non-hookah smokers ($OR = 1.91, p < .05$). Students who received the SBBH intervention compared to those in the control group were less likely to have risky perception of hookah as less addictive than cigarettes ($OR = 0.52, p < .05$). Cigarette use was not significant when included in the model ($OR = 1.07, p = 0.56$).

Predictors of perceiving that hookah smoking is less harmful than cigarette smoking included year in school. College graduates had nearly three times the odds of perceiving hookah as less harmful than cigarettes compared to sophomore students ($OR = 2.75, p < .05$). Students in a fraternity or sorority trended towards having lower odds of perceiving hookah as less harmful than cigarettes, compared to students not in a fraternity or sorority ($OR = 0.41, p < .01$). Cigarette use trended toward significance in the multivariate model, with smokers being less likely to perceive hookah as less harmful than cigarettes ($OR = 0.778, p < .01$).

Discussion

Consistent with previous studies, about thirty percent of our sample viewed hookah smoking as less harmful than cigarette smoking and about sixty percent viewed hookah smoking as less addictive than cigarette smoking, supporting previous work suggesting that there appear to be misconceptions surrounding the dangers of hookah use among college students.^{1, 3} These perceptions may contribute to the uptake, continued use, and disinterest in quitting of this tobacco use method.¹¹

There were no gender or racial/ethnic differences in hookah perceptions in this sample. However, those who were older (as evidenced by year in college) were more likely to perceive hookah as less harmful and less addictive compared to cigarette smoking. In prior research in a general population of hookah smokers, age was not associated with perceptions of harm.⁸ Since research has suggested that hookah smokers tend to be younger, these students may be savvier and have more experience with hookah smoking and thus may be aware of the dangers than older students.⁴ Those in a fraternity or sorority were less likely to perceive hookah smoking as less harmful than cigarettes. Members of fraternities and sororities have a higher prevalence of hookah smoking compared to non-members, making it possible that they are more aware of the dangers of smoking.¹¹ Furthermore, those in Greek organizations have been shown to have higher cigarette smoking rates compared to general student populations, making it possible that their perceptions could have been affected by targeted health promotion programs surrounding tobacco use.⁹

There were also differences based on substance use. Trending towards significance in the multivariate model, those who smoked cigarettes were less likely to have risky perceptions of hookah use. That is, cigarette smokers were less likely to perceive hookah smoking as less harmful than cigarettes. Recent research suggests that hookah smoking suppresses abstinence induced withdrawal symptoms and cravings in a similar fashion to cigarette smoking, which could explain the perception among cigarette smokers of similar risk in this type of tobacco use.¹² Hookah smokers had greater odds of perceiving hookah as less addictive compared to cigarettes, although there were no differences in perceived harmfulness. In past research, as many as 78% of college students who smoked hookah perceived this type of tobacco use as less addictive compared to cigarettes.³ This perception is not surprising and may be the result of the intermittent nature of hookah smoking, the lack of noxious fumes associated with use, and the common misconception that the water in the hookah pipe acts to filter.⁸

In conclusion, this is one of the first studies to examine factors associated with perceived harmfulness and perceived addictiveness of hookah smoking among college students. Recent research suggests that minimally intensive interventions that modify perceptions surrounding harmfulness and addictiveness of hookah smoking may increase the desire to quit among college students.¹¹ Additional research is needed to identify factors associated with perceptions of the harmfulness and addictiveness of hookah among college students to inform targeted prevention initiatives that modify tobacco use perceptions and, ultimately, decrease tobacco use.

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