

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Hookah's New Popularity Among US College Students: A Pilot Study of the Characteristics of Hookah Smokers and Their Facebook Displays
AUTHORS	Brockman, Libby; Pumper, Megan; Christakis, Dimitri; Moreno, Megan

VERSION 1 - REVIEW

REVIEWER	Jessica M. Rath, PhD, MPH, CHES Assistant Director, Research & Evaluation Legacy USA
REVIEW RETURNED	29-Aug-2012

THE STUDY	<ul style="list-style-type: none"> - The 1st objective is potentially known - work of Smith-Simone? - The conclusions are based on 2 Universities with little minority representation - Delete use of our, we etc... - This may be better presented as a pilot study with only 307 participants across 2 universities, not representative of each univ. moreless the population - It is risky to present this data when students who use the privacy settings on FB may be different from those that do not (brought up in limitations but I am not convinced this is not a major issue) - Was there other search criteria? - Can we be sure that people present the correct age in their profiles since that was one of the inclusion criteria - What else was aksed on the phone during the screening phone calls? - What is the ethical ramiications of calling people to invite them into the study who have not yet consented? The university can just give the list of all students and their phone numbers? This is surprising. - 307 were invited and 307 participated for a rate of 100%??? - Page 10, line 48, "endorsed" or smoked? - Page 10, line 52 is unclear. - First obj should be to confm the hookah use rate in college students not to estbalish it since there is already data that the authors cite on Page 12. - Page 12, line 15, shoudl this be students or young adults? - Page 12, line 34 - starting with lastly, should this be another objective? - Page 13, line 20 - does the data support this suggestions that marijuana prevention efforts should be paired with tobacco precention? In college students only? - Page 13, line 14 - this suggests...that the sample is representative of what? Nationally representative or rep of all college students? - Page 14, line 56 - unclear - Page 15, line 6, then what?
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REVIEWER	Emily Grekin Assistant Professor Department of Psychology Wayne State University Detroit, MI. 48202
REVIEW RETURNED	31-Aug-2012

THE STUDY	<p>There is some question about the representativeness of participants. Only publicly available Facebook profiles were coded, which excluded a large number of potential participants (N=1630). It is not clear whether students with public profiles differ from those with private profiles. The authors address this limitation in their Discussion section.</p> <p>I don't think data from the current study directly address the question of whether Facebook is an outlet that promotes/popularizes hookah use. This concern is described in more detail below.</p>
RESULTS & CONCLUSIONS	<p>In the Discussion section, the authors mention findings about the substances smoked by students through a hookah pipe (more than 20% report experience with marijuana or hash in their hookah). I don't see these data presented in the Results section.</p>
GENERAL COMMENTS	<p>This article examines the lifetime prevalence of hookah smoking among college undergraduates, as well as the substances typically smoked in a hookah pipe. Additionally, this study is the first to examine the prevalence of hookah references on Facebook profiles; a unique idea.</p> <p>My major concern about the study has to do with the significance/importance of results. A fairly large number of published studies have examined the prevalence and characteristics of hookah smoking among college undergraduates (See Grekin & Ayna, 2012, for a review). The prevalence rate of hookah smoking reported in the current study, as well as its association with other substances, is consistent with previously published data and I'm not convinced that the current findings add to the literature in a meaningful way.</p> <p>The finding that 20% of students have used marijuana or hash in their hookah pipe is new, however, again, I'd like to see more justification as to why this is important. A large number of studies have examined the prevalence rate of marijuana use among college students. Does it matter whether the marijuana is smoked through a joint, a hookah pipe or some other method? If so, why?</p> <p>I have a similar concern regarding the significance of the Facebook results. Results showed that, over the course of the past year, the vast majority (95%) of hookah smokers did not display hookah references on their Facebook profiles.</p> <p>The authors are interested in whether Facebook is an outlet that promotes and popularizes hookah use. I think this is a very interesting question - but not one that the current study address directly (i.e., we don't know whether the fairly infrequent references to hookah on Facebook promote use). Perhaps the authors could provide information about whether students who do display online references to hookah differ from those who don't (e.g., in terms of frequency of use or dependence). Even more relevant would be data regarding the number of students who have seen/been exposed to</p>

	Facebook hookah references and whether these exposures affect their own use.
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VERSION 1 – AUTHOR RESPONSE

- The 1st objective is potentially known - work of Smith-Simone?

THE authors acknowledge that many studies have attempted to estimate the prevalence of hookah use; current estimates range from 15-60% of young adults. This range is most likely due to study design and population of interest; some studies look at high school students while others look at undergraduates, graduate students, and/or young adults. The work of Smith-Simone et al (2008) recruited individuals from a hookah café and an online hookah forum. Given our interest in college student health, our study focused on undergraduate students. In order to clarify this point, we amended our primary aim in the Abstract (page 1) and Introduction (pg 4) to reflect this. We also took a new look at recent literature on hookah prevalence and included the results of a more recent review of the literature (Grekin et al, 2012) in the Introduction (current prevalence estimates were added at the top of page 3) and compared our results to data from the American College Health Association (ACHA) National College Health Assessment (first paragraph of the Discussion).

- The conclusions are based on 2 Universities with little minority representation

WE agree with the reviewer that there is little minority representation in our study sample and we have gone back and emphasized the lack of minority representation in the discussion of limitations (page 14). Further review of the literature suggests Arab students have the highest reported prevalence of hookah smoking in the US, followed by Caucasian and Asian students. Many studies have found that African American students report the lowest rates of hookah use. We have included this information in the Limitation section and believe that our sample & results are in tune with the known demographic correlates of water-pipe smoking.

- Delete use of our, we etc...

THANK you for pointing this out. We have removed all cases of first person speak.

- This may be better presented as a pilot study with only 307 participants across 2 universities, not representative of each univ. moreless the population

THE authors agree that this is most accurately described as a pilot study. First, they note the small sample size relative to the student population at each university. Second, while the codebook used to code Facebook profiles had been previously used to examine alcohol references on Facebook, this was the first time it was adapted to code for hookah references. Third, this study evaluated the feasibility of comparing survey data with Facebook content in preparation for a future, larger study. Please note that the term “pilot” has been added to the Introduction section(page 4).

- It is risky to present this data when students who use the privacy settings on FB may be different from those that do not (brought up in limitations but I am not convinced this is not a major issue)

THIS is an excellent point; the reviewer is correct that this is of concern. While an important next step would be to replicate this study with a sample of students with private Facebook profiles, we feel that given the pilot nature of this study, beginning with students who have public profiles was a logical and important population to start with. To remind readers from the outset of the discussion section that we coded public profiles on Facebook, we added the work “public” to the first sentence of the Discussion section (page 11). It now reads:

“This study explored characteristics of college student hookah smokers and evaluated the presence

of hookah references displayed on university students' public Facebook pages.”

- Was there other search criteria?

WE have clarified our subject selection and inclusion criteria in the Methods section (page 6). In order to recruit our study sample, we used the Facebook search engine to search within each university network for profiles who listed a graduation year indicating they were a freshman, sophomore, or junior student. Therefore, the search criteria for finding profiles on Facebook included “university network” and “graduation year”. From that point, inclusion criteria included a posted age of 18-20 years old and evidence of profile use within the past 30 days.

- Can we be sure that people present the correct age in their profiles since that was one of the inclusion criteria

THANK you for pointing this out. Once participants were identified using Facebook, participants were called on the phone at which point their identity and age were verified. We have clarified this point on page 7 in the Recruitment section.

- What else was asked on the phone during the screening phone calls?

AFTER identifying eligible participants via Facebook, participants were called on the phone to confirm their identity and age. The phone call was also used to explain the study procedures including the online survey. Similar to typical consent conferences, the phone call assessed eligibility and presented the study details (purpose, procedures, risks/benefits, etc).

- What are the ethical ramifications of calling people to invite them into the study who have not yet consented? The university can just give the list of all students and their phone numbers? This is surprising.

WE would like to note that one function of the phone call was to obtain consent from participants regarding our online survey. A link to the survey was only emailed to those who consented to receive it and participate in the study. If a student did not consent on the phone, they did not receive a link to the survey. At the time this study was done, many students listed their phone number on their Facebook profile. With an increasing trend in privacy concerns, this is less common today. For those who did not provide a phone number on their Facebook profile, the online university directory was used to obtain a phone number. At the time, the student/faculty directories were commonly available to the public on a university's website. Again, this practice is less common today due to privacy concerns.

We clarified the function of the phone call on page 7 by stating the following:

“The phone call served two purposes. First, profile owner's identity and age were verified. Second, eligible students were then recruited to participate in the online survey. Survey invites were only sent to profile owners whose identity could be confirmed over the phone.”

- 307 were invited and 307 participated for a rate of 100%???

THANK you for pointing out this confusion. In order to reach a target sample size of 200 survey participants, a total of 307 eligible profiles were identified on Facebook. To clarify this, we added the following sentence to the Subject Selection section (page 6):

“In order to reach a target survey sample size of 200 participants, a total of 307 eligible Facebook profiles were identified in 2009 and 2010 and invited to participate in the study.”

All 307 participants' Facebook profiles were coded for references to hookah. The local IRB

determined this to be exempt from individual consent because the profiles were public and their content visible and available to the global Facebook community. Further, no personal health or identifiable information was obtained during the Facebook coding procedures. However, consent was required for completing the online survey, which was the second function of the phone call. All 307 profile owners received a phone call but only 216/307 (70%) responded to the survey. Therefore, there was not a 100% response rate. We have clarified this by stating the following at the beginning of the Results section (page 9):

“A total of 307 Facebook profiles were coded and 216 (70% response rate) of these individuals completed all survey questions with viable answers and were included in the analyses.”

- Page 10, line 48, "endorsed" or smoked?

WE fixed this. It now reads as follows:

“Of those who reported ever using hookah, 40% reported ever smoking cigarettes, of whom 42.7% reported smoking cigarettes more than once a month.”

-Page 10, line 52 is unclear.

THANK you for pointing out this confusion. After being questioned about their hookah use, participants were also asked if they used other substances, including cigarettes and marijuana. Some hookah smokers reported no other substance use, using marijuana and cigarettes, while others reported only using marijuana. We want to point out here that none of the hookah smokers just smoked cigarettes. To clarify this point, we added Table 3 and reworded page 10, line 52 to read as follows:

“No hookah users endorsed cigarette use only; all hookah smokers who smoked cigarettes also smoked marijuana. (Table 3)”

- First obj should be to confirm the hookah use rate in college students not to establish it since there is already data that the authors cite on Page 12.

WE believe the additions described in response to your first comment address this request. We have amended our primary objective to reflect that this study confirms, rather than establishes, hookah use rates in college students.

-Page 12, line 15, should this be students or young adults?

OUR goal in the paragraph beginning on line 15 of page 12 is to discuss the clinical and public health concerns relating to the findings of this study. College students, rather than the general population of young adults, were the population of interest, so we have added the word “college”. The sentence now reads:

“The finding that so many college students are smoking hookah, and specifically smoking tobacco in their hookah, is cause for clinical and public health concern.”

- Page 12, line 34 - starting with lastly, should this be another objective?

THE authors agree with the reviewer that this research question is of significant importance. However, given the cross-sectional design of this current study, the authors did not feel they could draw conclusion about the potential of hookah as a gateway drug to cigarette smoking. We believe a longitudinal study would be more appropriate for studying this question. To address this, we have added the following limitation on page 15:

“Lastly, the cross-sectional design of this study precluded determining the temporal sequence of smoking hookah and engagement in other substance use. Future research including longitudinal studies are needed to explore these associations, especially the potential role of hookah as a gateway to cigarette smoking.”

-Page 13, line 20 - does the data support this suggestions that marijuana prevention efforts should be paired with tobacco precention? In college students only?

THANK you for pointing this out. The authors have added survey results reporting substances that college students commonly smoke in their hookah. This was inadvertently left out of the original manuscript. To shed light on this issue, we have added the following paragraph (page 10):

Substances smoked in the hookah

More than three-quarters (78%) of those who reported ever smoking hookah reported primarily smoking tobacco in their hookah. Only 12% reported smoking only hash in their hookah, while 10% reported smoking both marijuana/hash and tobacco in their hookah. A total of 22% reported using a hookah to smoke marijuana.

Given that 1 in 5 college hookah smokers use marijuana in their hookah, and that hookah smokers are more likely to use marijuana than non-hookah smokers (OR=15), we believe prevention and intervention efforts for these substances may be paired. We hope that the addition to the Results section, as outlined above, helps clarify the implication outlined in the Discussion.

- Page 13, line 14 - this suggests...that the sample is representative of what? Nationally representative or rep of all college students?

WE believe we have addressed this confusing language, as outlined in our response to this reviewer's second comment above. The manuscript now reads:

"First, participants were recruited from only two universities and the study sample included very few minority and no African American participants. While the study sample is demographically representative of the student population at the two selected universities, it is possible that these two universities do not provide a representative sample of the US college population. The literature suggests that after students of Arab descent, Caucasian students, followed by Asian students have the highest reported prevalence rates of smoking hookah.¹¹ Therefore, given that the participants were selected from large geographically distinct state universities and that these prevalence estimates are consistent with other studies' estimates, this suggests the results may be generalizable to the US college population."

- Page 14, line 56 - unclear

WE have clarified this point by rephrasing the implications of this study.

"To determine if hookah references aid in the promotion of hookah smoking among college students, more work is needed to explore the presence and meaning of hookah displays on Facebook. Further, similar to studies which have found Facebook to be feasible for identifying college students at risk for problem drinking, more work is needed to determine if SNSs may also be helpful for screening and identifying college students at risk for or engaged in hookah smoking."

- Page 15, line 6, then what?

WE hope to have cleared up the confusion here by editing our implications as discussed directly above. Please see new phrasing on the implications of this study.

Reviewer: Emily Grekin
Assistant Professor
Department of Psychology
Wayne State University
Detroit, MI. 48202

-There is some question about the representativeness of participants. Only publicly available Facebook profiles were coded, which excluded a large number of potential participants (N=1630). It is not clear whether students with public profiles differ from those with private profiles. The authors

address this limitation in their Discussion section.

WE thank the reviewer for pointing this out and hope that our amendments and clarification of this issue, as outlined above in response to Reviewer 1, address this issue. Please note the edits regarding representation of participants (page 14) and profile privacy settings (page 15). While we agree with the reviewer that the difference in content between public and private Facebook profiles remains unknown, the authors believe that students with public profiles were a logical and important population to start with.

-I don't think data from the current study directly address the question of whether Facebook is an outlet that promotes/popularizes hookah use. This concern is described in more detail below.

THE authors agree with the reviewer that more work is needed to determine whether Facebook is an outlet that promotes/popularizes hookah use. Give the powerful persuasion of social media, particularly among a developing young adults who comprise a generation of digital natives, we hope this study begins the conversation of how alternative media sources may influence behavior. Please note that suggestions for future work have been amended in the manuscript, as outlined above in response to Reviewer 1.

-In the Discussion section, the authors mention findings about the substances smoked by students through a hookah pipe (more than 20% report experience with marijuana or hash in their hookah). I don't see these data presented in the Results section.

THANK you for pointing this out, we have added these results to the Results section.

-This article examines the lifetime prevalence of hookah smoking among college undergraduates, as well as the substances typically smoked in a hookah pipe. Additionally, this study is the first to examine the prevalence of hookah references on Facebook profiles; a unique idea. WE are pleased that the reviewer found this to be a novel study.

-My major concern about the study has to do with the significance/importance of results. A fairly large number of published studies have examined the prevalence and characteristics of hookah smoking among college undergraduates (See Grekin & Ayna, 2012, for a review). The prevalence rate of hookah smoking reported in the current study, as well as its association with other substances, is consistent with previously published data and I'm not convinced that the current findings add to the literature in a meaningful way.

THE authors have conducted a more recent review of the literature and agree with both reviewers that the current study confirms rather than establishes the prevalence rate of hookah smoking among college students. We believe that hookah smokers' engagement in other substance use and substances smoked in hookah add to the current literature. For example, implications of this work involve pairing together hookah and marijuana interventions. We have amended our primary aim and Discussion section to reflect this.

-The finding that 20% of students have used marijuana or hash in their hookah pipe is new, however, again, I'd like to see more justification as to why this is important. A large number of studies have examined the prevalence rate of marijuana use among college students. Does it matter whether the marijuana is smoked through a joint, a hookah pipe or some other method? If so, why? The authors have added a paragraph to the Results section (page 10) outlining the interaction between marijuana use and hookah smoking.

WE believe that the mode of smoking marijuana matters. For example, the misperception held by many college students that hookah smoking is a safe alternative to cigarette smoking, and that their

use does not constitute “smoking”, suggests that college students differentiate between methods of smoking. Therefore, it is possible that college students may have altered perceptions of smoking marijuana in a hookah compared to smoking it in a joint or bong. Further, given that the literature attribute hookah’s popularity to its social nature and integration into the university social scene, it is possible that marijuana may also experience a sort of social promotion when associated with hookah. Therefore we believe that these results are important and have important implications for future research and interventions. We have added the following paragraph to the Discussion section justifying the importance of our findings:

“The findings that one in five hookah smokers smoke marijuana in their hookah, and that hookah smokers are more likely to smoke marijuana separately compared to non-hookah smokers, are important for two reasons. First, given that many college students maintain that hookah smoking is a safe alternative to cigarette smoking and that hookah smoking doesn’t constitute “smoking”,¹¹ it is possible that these young adults differentiate between methods of tobacco use. Similarly, college students may have altered perceptions of the safety of smoking marijuana in a hookah. Second, given the integration of hookah smoking into the social scene on college campuses, it is possible that marijuana may also experience a sort of social promotion when associated with hookah. This may have implications for intervention strategies and further work is needed to explore these ideas.”

- I have a similar concern regarding the significance of the Facebook results. Results showed that, over the course of the past year, the vast majority (95%) of hookah smokers did not display hookah references on their Facebook profiles. The authors are interested in whether Facebook is an outlet that promotes and popularizes hookah use. I think this is a very interesting question - but not one that the current study address directly (i.e., we don't know whether the fairly infrequent references to hookah on Facebook promote use). Perhaps the authors could provide information about whether students who do display online references to hookah differ from those who don't (e.g., in terms of frequency of use or dependence). Even more relevant would be data regarding the number of students who have seen/been exposed to Facebook hookah references and whether these exposures affect their own use.

WE agree with the reviewer that the prevalence of hookah displays on Facebook does not compare with the prevalence of hookah smoking in this population. We have added this assessment to the Discussion section (page 14). However, as mentioned in response to Reviewer 1, social media such as SNSs may be a particularly powerful form of persuasion regarding behavior change for young adults who are digital natives. For this reason, we included these results and hope to delve further into their meaning in future studies. Lastly, we are in agreement with these reviewer’s comments, but unfortunately the nature of our dataset precludes us from drawing conclusions about the specific individuals who display online references to hookah. Also, due to the technical nature & design of Facebook itself, it is unfortunately impossible to determine the number of students who have seen/been exposed to such Facebook hookah references.