

Hookah: Popularity, Use, and Risks

Authors: Stephen Nuñez, Dessaray Gorbett B.S. & Giovanna Perez B.S.

The University of Texas at El Paso

School of Pharmacy

Introduction

Tobacco use is the leading cause of preventable death in the United States (U.S.) killing more than 480,000 people per year.¹ Although, steady decreases in smoking rates in the U.S. have been noted, there has not been a significant decrease in recent years.² This could be due to emerging tobacco products, such as hookahs (Figure 1), becoming increasingly popular.^{3,4} Due to increasing popularity amongst adolescents and young adults in the U.S., hookah use has become an area of concern in the Paso del Norte region.

Figure 1. Modern Hookah Device



In 2010, the U.S. Surgeon General published a report titled, *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease*.⁵ The report concluded nicotine to be as addictive as cocaine and heroin.⁵ The nicotine content in hookah smoke has been found to be two times greater than conventional cigarettes.⁶ Similar to cocaine and heroin, nicotine leads to a physical dependence and causes withdrawal symptoms.⁷ The highly addictive quality of nicotine and high nicotine content found in hookah is cause for concern since hookah smokers may become quickly addicted. These addictive qualities are concerning especially due to the increase of hookah popularity among younger populations.

Hookah use in adolescents

Although cigarette use among adolescents is declining, the use of alternative tobacco products is increasing.^{8,9} Specifically, 9.4% of high school students in the U.S. reported using

hookah,⁸ meanwhile 41.2% reported knowing about hookah.¹⁰ Among middle school students, 4% reported using hookah.¹¹ Additionally, Hispanics have reported higher rates of hookah use when compared to other ethnicities.^{12,9} These rates are alarming since nicotine is highly addictive and hookah smoke has detrimental effects on health.¹³ Reviews on hookah's health effects and the addictiveness of nicotine have found that hookah is not less addictive^{14,15} or less harmful than cigarettes.^{16,17,18} Despite these findings, hookah users perceive hookah as less harmful and less addictive.¹⁹ This could be due to the tobacco industry promoting hookah as less harmful.²⁰

Similar to electronic cigarettes, hookah is less regulated than cigarettes and is appealing to adolescents because of its flavors.^{21,22} For example, flavored tobacco often used in hookah, helps disguise the harsh flavors of tobacco and gives the user a sense of safety.²² This compliments research that reports hookah as adolescent's first tobacco product²¹; thus, describing hookah as an initiation product. Additionally, past hookah use is associated with positive beliefs and intentions to use conventional and alternative tobacco products.^{21,12} For adolescents who have ever tried hookah, 43% have ever tried electronic cigarettes and 22% reported being current electronic cigarette users.²¹

Hookah use in young adults

A major concern of hookah use is that it is often perceived as a safer alternative to traditional cigarettes. Theory of planned behavior emphasizes the importance beliefs, attitudes, and social norms are to behavior.²³ In the context of smoking, subjective attitudes and beliefs about smoking lead to engaging in smoking behavior. Common misconceptions observed in college aged individuals include perceptions of hookah being less harmful, less addictive, and containing lower levels of nicotine.^{24,25} Furthermore, college students report hookah use as more

socially acceptable compared to cigarette smoking.²⁵ Research has shown an association between low perceived harm, low addictiveness, and high social acceptability to hookah use.²⁶ Therefore, these misconceptions about the safety of hookah lead to the initiation of hookah use among college students.

In addition, college students are at a unique developmental period which makes them more susceptible to engaging in risky behavior. In a comprehensive assessment of hookah use among college students in an urban Midwestern university, researchers found that 50% of participants had tried hookah, 22% had used hookah in the past 30 days, and 13% had future intentions to try hookah.²⁵ The initiation of hookah use begins between the ages of 17-19.²⁵ This age range coincides with the traditional college student age range (18-22). A study by Allem & Unger²⁷ assessed emerging adulthood themes and its relationship to hookah use among a sample of college students. Findings from this article highlight the vulnerability of college students. Participants who believed emerging adulthood (18-25 years old) was a time for experimentation were more likely to report hookah use. Given that these attitudes and subjective norms may lead to hookah use, efforts should be made to inform young adults of the health detriments of hookah smoking.

Conclusion/Summary

The present paper summarized findings on the harms of hookah use, the use of hookah in adolescents and young adults, and contributing factors of initiation of hookah use. As discussed above, the exposure to nicotine and other chemicals were present in hookah bars. In a study by Kassem et. al²⁸ researchers examined the effects of hookah use in homes with children. Researchers found that the children living in the homes showed levels of nicotine and other

known carcinogens.²⁸ These findings also highlight the associations of hookah use in later life among individuals who lived with parents that also smoked hookah. Furthermore, social norms and perceptions were important factors in hookah use. Adolescents and young adults showed lower perceived harms of hookah use and high social acceptability of use. Both of these factors influence hookah use. Therefore, addressing these individual beliefs is crucial for prevention efforts. Conversely, media campaigns have focused primarily on youth prevention and cessation of traditional cigarettes.^{29,30} However, given the increase in use of novel tobacco products such as hookah, the development of campaigns that address hookah use in both adolescents and young adults are warranted. In conclusion, for healthcare professionals it is important to assess patients' tobacco use, to include hookah, at every visit and promote cessation resources available such as 915-534-QUIT or www.smokefreepdn.org.

References

1. Courtney R. The Health Consequences of Smoking-50 Years of Progress: A Report of the Surgeon General, 2014. Us Department of Health and Human Services Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for. *Drug and Alcohol Review*. 2015;34(6):694-695. Doi:10.1111/dar.12309.
2. Borrelli B. Smoking cessation: Next steps for special populations research and innovative treatments. *Journal of Consulting and Clinical Psychology*. 2010;78(1):1-12. doi:10.1037/a0018327.
3. Wagao Prieto. Hookah. Flickr.<https://www.flickr.com/photos/wagaoprieto/5733426193/in/photolist-4njqwT a3Fnzr>. Published May 18, 2011. Accessed February 14, 2019
4. Goniewicz ML, Leigh NJ, Gawron M, et al. Dual use of electronic and tobacco cigarettes among adolescents: a cross-sectional study in Poland. *International Journal of Public Health*. 2015;61(2):189-197. doi:10.1007/s00038-015-0756-x.
5. Centers for Disease Control and Prevention. How tobacco smoke causes disease: the biology and behavioral basis for smoking-attributable disease: a report of the surgeon general. 2010
6. Kiter G, Uçan E, Ceylan E, Kiliç O. Water-pipe smoking and pulmonary functions. *Respiratory Medicine*. 2000;94(9):891-894. doi:10.1053/rmed.2000.0859.
7. Deolia S, Agarwal S, Chhabra KG, Daphle G, Sen S, Jaiswal A. Physical and Psychological Dependence of Smokeless and Smoked Tobacco. *Journal Of Clinical And Diagnostic Research*. 2018. doi:10.7860/jcdr/2018/28583.11233.
8. Arrazola, R. A., Singh, T., Corey, C. G., Husten, C. G., Neff, L. J., Apelberg, B. J., ... & McAfee, T. Tobacco use among middle and high school students-United States, 2011-2014. *MMWR. Morbidity and Mortality Weekly Report*, 64 (14), 381-385.
9. Barnett TE, Tomar SL, Lorenzo FE, Forrest JR, Porter L, Gurka MJ. Hookah Use Among Florida High School Students, 2011–2014. *American Journal of Preventive Medicine*. 2017;52(2):220-223. doi:10.1016/j.amepre.2016.10.027.
10. Wang B, King BA, Corey CG, Arrazola RA, Johnson SE. Awareness and Use of Non-conventional Tobacco Products Among U.S. Students, 2012. *American Journal of Preventive Medicine*. 2014;47(2). doi:10.1016/j.amepre.2014.05.003.
11. Barnett TE, Smith T, He Y, et al. Evidence of emerging hookah use among university students: a cross-sectional comparison between hookah and cigarette use. *BMC Public Health*. 2013;13(1). doi:10.1186/1471-2458-13-302.
12. Amrock SM, Gordon T, Zelikoff JT, Weitzman M. Hookah Use Among Adolescents in the United States: Results of a National Survey. *Nicotine & Tobacco Research*. 2013;16(2):231-237. doi:10.1093/ntr/ntt160.
13. Waziry R, Jawad M, Ballout RA, Akel MA, Akl EA. The effects of waterpipe tobacco smoking on health outcomes: an updated systematic review and meta-analysis: Table 1. *International Journal of Epidemiology*. 2016. doi:10.1093/ije/dyw021.
14. Cobb C, Ward KD, Maziak W, Shihadeh AL, Eissenberg T. Waterpipe Tobacco Smoking: An Emerging Health Crisis in the United States. *American Journal of Health Behavior*. 2010;34(3):275-285. doi:10.5993/ajhb.34.3.3.

15. Noonan D, Kulbok PA. New tobacco trends: Waterpipe (hookah) smoking and implications for healthcare providers. *Journal of the American Academy of Nurse Practitioners*. 2009;21(5):258-260. doi:10.1111/j.1745-7599.2009.00402.x.
16. Eissenberg T, Shihadeh A. Waterpipe Tobacco and Cigarette Smoking. *American Journal of Preventive Medicine*. 2009;37(6):518-523. doi:10.1016/j.amepre.2009.07.014.
17. Knishkowsky B. Water-Pipe (Narghile) Smoking: An Emerging Health Risk Behavior. *Pediatrics*. 2005;116(1). doi:10.1542/peds.2004-2173.
18. Shihadeh A. Investigation of mainstream smoke aerosol of the argileh water pipe. *Food and Chemical Toxicology*. 2003;41(1):143-152. doi:10.1016/s0278-6915(02)00220-x.
19. Barnett TE, Curbow BA, Soule EK, Tomar SL, Thombs DL. Carbon Monoxide Levels Among Patrons of Hookah Cafes. *American Journal of Preventive Medicine*. 2011;40(3):324-328. doi:10.1016/j.amepre.2010.11.004.
20. Richardson A, Ganz O, Vallone D. Tobacco on the web: surveillance and characterisation of online tobacco and e-cigarette advertising. *Tobacco Control*. 2014;24(4):341-347. doi:10.1136/tobaccocontrol-2013-051246.
21. Barnett TE, Soule EK, Forrest JR, Porter L, Tomar SL. Adolescent Electronic Cigarette Use. *American Journal of Preventive Medicine*. 2015;49(2):199-206. doi:10.1016/j.amepre.2015.02.013.
22. Griffiths MA, Ford EW. Hookah Smoking: Behaviors and Beliefs among Young Consumers in the United States. *Social Work in Public Health*. 2013;29(1):17-26. doi:10.1080/19371918.2011.619443.
23. Ajzen I. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. 1991;50(2):179-211. doi:10.1016/0749-5978(91)90020-t.
24. Jarrett T, Blosnich J, Tworek C, Horn K. Hookah Use Among U.S. College Students: Results From the National College Health Assessment II. *Nicotine & Tobacco Research*. 2012;14(10):1145-1153. doi:10.1093/ntr/nts003.
25. Heinz AJ, Giedgowd GE, Crane NA, et al. A comprehensive examination of hookah smoking in college students: Use patterns and contexts, social norms and attitudes, harm perception, psychological correlates and co-occurring substance use. *Addictive Behaviors*. 2013;38(11):2751-2760. doi:10.1016/j.addbeh.2013.07.009.
26. Primack BA, Sidani J, Agarwal AA, Shadel WG, Donny EC, Eissenberg TE. Prevalence of and Associations with Waterpipe Tobacco Smoking among U.S. University Students. *Annals of Behavioral Medicine*. 2008;36(1):81-86. doi:10.1007/s12160-008-9047-6.
27. Allem J-P, Unger JB. Emerging adulthood themes and hookah use among college students in Southern California. *Addictive Behaviors*. 2016;61:16-19. doi:10.1016/j.addbeh.2016.05.002.
28. Kassem NOF, Daffa RM, Liles S, et al. Children's Exposure to Secondhand and Thirdhand Smoke Carcinogens and Toxicants in Homes of Hookah Smokers. *Nicotine & Tobacco Research*. 2014;16(7):961-975. doi:10.1093/ntr/ntu016.
29. Brinn MP, Carson KV, Esterman AJ, Chang, AB, & Smith BJ. Cochrane Review: Mass media interventions for preventing smoking in young people. *Evidence-Based Child Health: A Cochrane Review Journal*, 7(1), 86-144.
30. Durkin S, Brennan E, Wakefield M. Mass media campaigns to promote smoking cessation among adults: an integrative review. *Tobacco Control*. 2012;21(2):127-138. doi:10.1136/tobaccocontrol-2011-050345.