



CLINICAL SCHOLARSHIP

Knowledge, Beliefs, Behaviors, and Social Norms Related to Use of Alternative Tobacco Products Among Undergraduate and Graduate Nursing Students in an Urban U.S. University Setting

Nancy VanDevanter, DrPh, RN, FAAN¹, Sherry Zhou, BA², Carina Katigbak, PhD, RN, ANP-BC³, Madeline Naegle, PhD, CNS-PMH, BC, FAAN⁴, Scott Sherman, MD, MPH⁵, & Michael Weitzman, MD⁶

¹ *Upsilon*, Associate Professor, New York University College of Nursing NYU Global Institute of Public Health, New York City, NY, USA

² Resident, University of Michigan School of Medicine, Ann Arbor, MI, USA

³ *Alpha Chi*, Assistant Professor, Boston College School of Nursing, Chestnut Hill, MA, USA

⁴ *Upsilon*, Professor, New York University College of Nursing, NYU Global Institute of Public Health, New York City, NY, USA

⁵ Associate Professor, New York University School of Medicine, NYU Global Institute of Public Health, NYU/Abu Dhabi Public Health Research Center, New York City, NY, USA

⁶ Professor, New York University School of Medicine, NYU Global Institute of Public Health, NYU/Abu Dhabi Public Health Research Center, New York City, NY, USA

Key words

Alternative tobacco products, nursing students, smoking cessation counseling

Correspondence

Dr. Nancy VanDevanter,
New York University, College of Nursing,
4331st Avenue, New York, NY 10010.
E-mail: nvd2@nyu.edu

Accepted: November 24, 2015

doi: 10.1111/jnu.12192

Abstract

Purpose: The purpose of the study was to assess nursing students’ knowledge, beliefs, behaviors, and social norms regarding use of alternative tobacco products (ATPs).

Design and Methods: This anonymous online survey was conducted with all students enrolled in a college of nursing. The survey utilized measures from several national tobacco studies to assess knowledge and beliefs about ATPs (hookahs, cigars or cigarillos, bidis, kreteks, smokeless tobacco, electronic cigarettes) compared to cigarettes, health effects of ATPs, personal use of ATPs, and social norms. Data were analyzed in SPSS 22.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics and frequencies were performed for basic sociodemographic data. Paired samples *t* tests were performed to determine differences for scaled measures.

Findings: Nursing students demonstrated very low levels of knowledge about ATPs and their health consequences, despite high rates of ATP personal use. About 76% of participants reported use of one or more ATPs once or more in their lifetimes. A greater proportion of students had used hookahs or waterpipes (39.6%) compared to cigarettes (32.7%).

Conclusions: Nurses’ lack of knowledge about the emerging use and health threats associated with ATPs may undermine their ability to provide appropriate tobacco cessation counseling. Research is needed to identify gaps in nurses’ education regarding tobacco cessation counseling and to develop new counseling approaches specific to use of ATPs.

Clinical Relevance: Nurses play critical roles in counseling their patients for tobacco cessation. Further research and education about the risks presented by ATPs are critical to reducing excess tobacco-related mortality.

Nurses and other healthcare providers play key roles in screening and smoking cessation for their patients. However, studies have shown that providers who themselves smoke are less likely to assess and counsel their patients about smoking cessation (Braun et al. 2004;

Sarna, Brown, Lillington, Wewers, & Brecht, 2000; Ulbricht et al., 2008). A report analyzing data from the U.S. National Tobacco Use Supplement comparing smoking rates in healthcare professionals from 2003 to 2010–2011 demonstrated continued declines among physicians

to 1% and registered nurses to 7% (Sarna, Bialous, Nandy, Antonio, & Yang, 2014). These rates are significantly lower than the general population rate of 18.1%. Healthcare providers as a group have among the lowest rates of smoking in the United States. An international review of tobacco smoking among nurses revealed an overall pattern of smoking reduction since the 1970s, with higher rates in some developing countries. However, there were considerable inconsistencies in developed countries, with some reporting rates significantly higher than those in the United States. Asian countries generally had lower rates for female nurses, who are culturally less inclined to smoke (Smith & Leggat, 2007).

Though rates of cigarette smoking in the United States have declined dramatically over the past several decades, the Centers for Disease Control and Prevention (CDC) recently warned that the rise in use of alternative tobacco products (ATPs) may undercut the success of efforts to decrease cigarette consumption (CDC, 2012a). For example, recent studies of U.S. college and university students have shown that 40% to 54% have used ATPs during their lifetimes (Cobb, Ward, Maziak, Shihadeh, & Eissenberg, 2010; Primack et al., 2008; Rahman, Chang, Hadgu, Salinas-Miranda, & Corvin, 2014). Little is known about use of these products by healthcare providers. Reports of ATP use among international medical students have found rates of up to 20% (Nawaz, et al. 2007; Senkubuge, Ayo-Yusuf, Louwagie, & Okuyemi, 2012). A recent study conducted with medical students in an urban U.S. medical center found that about 4% reported current cigarette use, 4.8% currently used ATPs, and 51.7% reported lifetime use of ATPs. Students in the study consistently estimated cigarettes to be more harmful than ATPs despite the absence of research evidence comparing the two (Zhou et al., 2015). No studies of nurses' use of ATPs have been published to date.

The most common ATPs used today are hookahs, electronic cigarettes (e-cigarettes), cigars, and cigarillos. Hookah, also known as waterpipe and narghile, is an alternative nicotine delivery system to cigarettes in which shisha (tobacco or nontobacco combustible materials) is smoked. The shisha is heated in a bowl of charcoal that is ignited to create smoke. Smoke from the bowl is drawn through a tube that passes through a water jar that cools and humidifies the smoke (American Lung Association, 2007). In contrast, e-cigarettes, which resemble tobacco cigarettes, do not contain any tobacco but do deliver nicotine that has been vaporized electronically to simulate tobacco smoke (Caponnetto, Campagna, Papale, Rosso, & Polosa, 2012). Smokeless tobacco, also called chewing and spit tobacco, is a less commonly used ATP. Bidis

and kreteks are small rolled cigarettes containing tobacco, cloves, and sometimes flavors. While the prevalence of bidi and kretek use in the United States is low compared to other ATPs, they contain more nicotine, tar, and carbon monoxide than conventional cigarettes and are therefore more injurious to the health of smokers (Watson, Polzin, Calafat, & Ashley, 2003).

The health effects of all ATPs are understudied. A systematic review of 24 studies conducted by Akl and colleagues (2010) concluded that hookah smoking was associated with increased risks for lung cancer, respiratory disease, and low birth weight. These studies, however, had some methodological limitations, and more rigorous studies are needed. A small study employing direct laboratory comparison of hookah use to cigarette use in the same individuals found far greater carbon monoxide levels and exposure to smoke in hookah use, but similar nicotine levels in cigarettes and hookahs (Eissenberg & Shihadeh, 2009). While e-cigarettes have been promoted as a harm reduction strategy for tobacco smokers, the health effects of this product have not been thoroughly studied.

Over the past 30 years nurses have made significant contributions to screening and smoking cessation for their patients (Rice & Stead, 2008). As the use of ATPs increases in the general population, nurses will need to adapt their smoking cessation counseling skills to address those changes. Studies are needed to assess nurses' current knowledge, beliefs, social norms, and personal use related to ATPs.

This study examines current use of cigarettes, marijuana, and ATPs, as well as knowledge, beliefs, social norms, and behaviors regarding use of ATPs among undergraduate and graduate nursing students in a large, urban university.

Methods

This anonymous, cross-sectional survey was conducted online over a 7-week period from mid-February to April 2014 with all students enrolled in a college of nursing. The study was deemed exempt by the institutional review board because it was anonymous.

Sample and Recruitment

Prior to the study, the investigators met with leaders of the undergraduate and graduate student organizations at the College of Nursing to discuss the study and seek support from the association leadership. Support for the study was also sought and provided by college administrators and faculty. The organizational leaders provided valuable feedback on recruitment approaches and

incentives to encourage participation. The research team met with the leaders of each organization and described the study and encouraged participation by all students. Organization leaders then described the study to their constituencies and encouraged participation. An email describing the study purpose was sent several weeks later to all matriculated students within the College of Nursing, encouraging their participation and offering an incentive of an i-Pad mini. This incentive would be awarded by raffle for all participants who completed the study. A link was provided at the end of the survey for participants to register for the raffle. There was no email link between the survey and the raffle. Five email reminders were sent over the next 8 weeks to the entire student body to encourage participation. In addition, faculty in required courses encouraged students to participate.

Data Collection and Measures

We collected data by an anonymous, online survey using Survey Monkey software (Palo Alto, CA, USA). In total there were 33 items. The survey was pilot tested with 15 health sciences students, residents, and junior faculty in a masters of science class. Based on their feedback, wording and order of some questions was changed. Pretesting estimated the time to completion at 10 min to reduce respondent burden. In addition to demographic variables, we used several valid and reliable measures from national and international tobacco research studies, including the National Youth Tobacco Survey (NYTS; CDC, 2012b). The NYTS is conducted annually by the CDC and designed to provide national data on indicators key to the design, implementation, and evaluation of comprehensive tobacco prevention and control programs. We adopted several questions from the World Health Organization-CDC Global Health Professional Survey (GHPS; CDC Foundation, World Health Organization, & World Lung Foundation, 2015), a school-based survey of third-year health sciences students conducted globally every year. Both surveys are widely used in tobacco research and are considered the standard for the field. The measures from both the NYTS and the GHPS were derived from the CDC (2012c) Youth Risk Behavior Survey (YRBS). Reliability studies were conducted on the YRBS with 1,679 students; the YRBS demonstrated high reliability across two testing periods 2 weeks apart. Kappa statistics were calculated for each of the 53 items, and group prevalence rates were estimated for the two testing periods. Kappas ranged from 14.5% to 91.1%, with 71.7% of items rated as high reliability. There were no significant differences in prevalence rates for the two testing periods (Brenner, Collins, Kann, Warren, & Williams, 1995). Measures used in a survey of medical students

on ATPs were also included in this survey (Vanderhoek et al., 2013). Detailed questions in each domain are described below.

Demographics. We assessed sociodemographic variables including age, gender, race or ethnicity, undergraduate or graduate student status, and completion of at least one clinical rotation.

Knowledge and beliefs. We assessed knowledge and beliefs about various ATPs (hookahs, cigars or cigarillos, bidis, kreteks, smokeless tobacco, e-cigarettes) by asking “How much tobacco does one cigar contain compared to conventional cigarettes” and “What do e-cigarettes contain?” To assess knowledge about the health effects of ATPs compared to cigarettes, we asked participants to “Please rate the degree (on a scale of 1–5) to which [ATPs or cigarettes] are responsible for each of the following diseases” (gastrointestinal [GI] tract cancer, chronic obstructive pulmonary disease [COPD], coronary artery disease [CAD], gallstones, etc.) and posed the question “How does the potential for addiction to each of the products compare to cigarettes?”

Personal use. In addition, we asked questions about personal use of ATPs from the GHPS (e.g., “Please indicate your use of the following tobacco products [once or more in my life, past year, past 30 days, never]”).

Social norms. Consistent with the literature on social norms theory (Lapinski & Rimal, 2005), we defined social norms as the prevalence of tobacco or ATP use among friends and family, and we asked questions from the NYTS (e.g., “To the best of your knowledge, which of the following behaviors, if any, do your friends [family] engage in?” [Choose all that apply.]

Data Analysis

We used SPSS 22.0 (SPSS Inc., Chicago, IL, USA) to conduct our analysis. We performed descriptive statistics and frequencies for sociodemographic data. We performed frequency analyses to determine students’ knowledge and beliefs about tobacco and ATPs, social norms for cigarette and ATP use, and patterns of personal tobacco and ATP use. Knowledge of the respective contributions of ATPs versus cigarettes for specific diseases was measured on a scale ranging from 1 (“not at all responsible”) to 5 (“largely responsible”). Mean scores were calculated for each disease according to ATP or cigarette category. Paired samples *t* tests were performed to detect differences in these mean scores. Pearson’s chi-square tests detected differences in social norms of tobacco

use by family and friends according to respondents' education level (undergraduate vs. graduate).

Results

Recruitment emails were sent to 1,883 students in the College of Nursing. Among the 961 nursing students who accessed the survey, 828 responded to all 33 questions, for a response rate of 44%. The remaining 133 did not complete the entire set of knowledge questions and were eliminated from this analysis.

Participant Characteristics

The majority of participants self-identified as female (88.4%), White (57.1%), and undergraduate, both traditional and accelerated (students with a prior undergraduate degree; 55.8%). The mean ages were 24.7 years for undergraduate participants and 32.4 years for graduate students, with an overall range of 18–58 years. Most (73.7%) had completed at least one clinical course rotation.

Table 1. Knowledge and Beliefs About Tobacco and Alternative Tobacco Products Among Nursing Students (N = 821)

Question	Frequency of correct responses n (%)
What percentage of U.S. high school students have used any tobacco product in the past 30 days? Answer = 16–20%	209 (25.5)
How much tobacco does one cigar contain compared to conventional cigarettes? Answer = > 1 pack (20 cigarettes)	16 (1.9)
What are bidis? Answer = small, thick hand-rolled cigarettes	126 (15.3)
What are kreteks? Answer = a mixture of tobacco and cloves	53 (6.5)
Which of the following are found in electronic cigarettes? Answer = all options (except "I don't know")	72 (8.8)
Compared to cigarettes, what is the potential for addiction for: Answer = "currently the answer is not known"	
Hookahs	22 (2.7)
Cigars	137 (16.7)
Cigarillos	18 (2.2)
Bidis	39 (4.8)
Kreteks	50 (6.1)
Smokeless tobacco	9 (1.1)
E-cigarettes	54 (6.6)

Table 2. Students' Knowledge and Beliefs About the Contribution of Cigarettes Compared to Alternative Tobacco Products (ATPs) to Various Diseases (N = 828)

	ATPs Mean (SD)	Cigarettes Mean (SD)	p ^a
Bladder cancer	3.40 (1.10)	3.76 (1.12)	<.001
GI cancer	4.12 (0.93)	4.59 (0.70)	<.001
Liver cancer	3.40 (1.05)	3.71 (1.07)	<.001
Lung cancer	4.12 (0.93)	4.88 (0.46)	<.001
CAD	3.92 (0.92)	4.55 (0.68)	<.001
COPD	4.05 (0.95)	4.82 (0.54)	<.001
Gallstones	3.26 (1.06)	3.52 (1.10)	<.001

Note. Knowledge scored from 1 to 5, where 1 = *not at all responsible*; 2 = *slightly responsible*; 3 = *somewhat responsible*; 4 = *moderately responsible*; and 5 = *largely responsible*. CAD = coronary artery disease; COPD = chronic obstructive pulmonary disease; GI = gastrointestinal.

^aPaired samples *t* test.

Knowledge and Beliefs About Health Effects of Tobacco and ATP Use

Approximately 25% of participants correctly identified the percentage of U.S. high school students who had used any tobacco product within the past 30 days (16%–20%; **Table 1**). However, participants were markedly less knowledgeable about ATPs. With the exception of bidis, fewer than 10% of nursing students correctly identified the amount of tobacco in a cigar versus a conventional cigarette (1.9%), the toxicants contained in e-cigarettes (8.8%), and the contents of kreteks (6.5%).

Knowledge and Beliefs About Tobacco's and ATPs' Contributions to Various Diseases

When comparing the contributions of tobacco products on disease prevalence (where 1 = *not at all responsible* and 5 = *largely responsible*; **Table 2**), mean scores were significantly higher ($p < .001$) for cigarettes versus ATPs across all diseases (bladder, GI, liver, and lung cancers; CAD; COPD; and gallstones).

Personal Use of Cigarettes, Marijuana, and ATPs

A greater proportion of students had used hookahs or waterpipes (39.6%) "once or more in my life" compared to cigarettes (32.7%), and marijuana (35.3%; **Table 3**). Use patterns within the past 30 days, however, were higher for cigarettes (7.9%) and marijuana (6.0%) compared to hookahs (2.9%). Overall, 75.8% of participants reported use of one or more ATPs (cigars or cigarillos, hookahs, bidis or kreteks, smokeless tobacco, e-cigarettes) once or more in their lifetime.

Table 3. Patterns of Tobacco and Alternative Tobacco Product (ATP) Use Among Nursing Students ($N = 819$)

Product	Frequency of tobacco or ATP use n (%)			
	Once or more in my life	In the past year	In the past 30 days	Never
Cigarettes	268 (32.7)	48 (5.9)	65 (7.9)	438 (53.5)
Cigars/cigarillos	173 (21.1)	22 (2.7)	3 (0.4)	621 (75.8)
Hookahs	324 (39.6)	81 (9.9)	24 (2.9)	390 (47.6)
Bidis/kreteks	23 (2.8)	2 (0.2)	1 (0.1)	793 (82.5)
Smokeless tobacco	43 (5.3)	2 (0.2)	2 (0.2)	772 (94.3)
Marijuana	289 (35.3)	70 (8.5)	49 (6.0)	411 (50.2)
E-cigarettes	57 (7.0)	35 (4.3)	19 (2.3)	708 (86.4)

Table 4. Prevalence of Tobacco and Alternative Tobacco Product (ATP) Use Among Nursing Students' Friends and Immediate Family Members ($N = 821$)

Social category and type of tobacco product	Overall ($N = 821$) n (%)	UG ($N = 455$) n (%)	Grad ($N = 366$) n (%)	p^a
Friends' use of tobacco and ATPs				
Cigarettes	551 (67.1)	326 (39.7)	225 (27.4)	.002
E-cigarettes	280 (34.1)	175 (21.3)	105 (12.8)	.002
Chewing tobacco	130 (15.8)	86 (10.5)	44 (5.4)	.004
Cigars, cigarillos, little cigars	218 (26.6)	132 (16.1)	86 (10.5)	.046
Hookahs/waterpipes	354 (43.1)	232 (28.3)	122 (14.9)	.000
Bidis/kreteks	16 (1.9)	12 (1.5)	4 (0.5)	.067
None of my friends use any form of tobacco	211 (25.7)	98 (11.9)	113 (13.8)	.002
Immediate family members' use of tobacco and ATPs				
Cigarettes	280 (34.1)	154 (18.8)	126 (15.3)	.882
E-cigarettes	77 (9.4)	37 (4.5)	40 (4.9)	.226
Chewing tobacco	34 (4.1)	21 (2.6)	13 (1.6)	.376
Cigars, cigarillos, little cigars	94 (11.4)	60 (7.3)	34 (4.1)	.076
Hookahs/waterpipes	64 (7.8)	38 (4.6)	26 (3.2)	.510
Bidis/kreteks	11 (1.3)	7 (0.9)	4 (0.5)	.525
None of my immediate family members use any form of tobacco	468 (57.0)	259 (31.5)	209 (25.5)	1.00

Note. Grad = graduate students; UG = undergraduate students.

^aPearson chi-square test.

Social Norms for Tobacco and ATP Use

Social norms surrounding tobacco and ATP use were defined by use patterns among friends and immediate family members. Cigarettes were the most frequently reported tobacco product used by both friends (67.1%) and family (34.1%; **Table 4**). Immediate family members of more than half of all students (57%) compared to only 25.7% of friends reported never using any forms of tobacco. When comparing cigarettes and ATP use among friends, undergraduates consistently reported significantly higher use for both compared to graduate students. Undergraduates reported 39.7% of friends currently smoked cigarettes compared to 27.4% of graduate students ($p > .0001$), and 28.3% of undergraduates reported friends smoked hookah compared to 14.9% of graduate students ($p > .0001$). However, there were no significant differences between undergraduate and graduate students' family members' use of any tobacco products.

Discussion

To the authors' knowledge, this is the first study of undergraduate and graduate nursing students in a large urban university to assess knowledge, beliefs, social norms, and behavior regarding ATPs, an emerging health threat. Student participants overall demonstrated very low levels of knowledge and inaccurate beliefs about these products and their health consequences. They consistently rated cigarettes versus other tobacco products as resulting in higher health risks for diseases like cancers, heart disease, and respiratory disease, despite the lack of studies comparing them. These responses persisted despite the option to choose the response "answer currently unknown." Fewer than 2% correctly estimated the amount of tobacco in one cigar compared to a conventional cigarette (one pack of cigarettes equals one cigar), and only 8% were aware of the harmful products contained in an e-cigarette.

The rate of cigarette smoking for nursing students was significantly lower (7.9%) than the U.S. adult cigarette smoking rate of 18% in the past 30 days and consistent with national studies of healthcare professionals, in which nurses' current smoking rates were found to be 7.1% (Sarna, et al., 2014). Almost 40% of participants reported lifetime hookah smoking, about 10% in the past year, and about 3% in the past 30 days. These rates are similar to those reported in the study of medical students in an urban U.S. medical school, where 43% reported ever using a hookah, 16% in the past year, and 1% in the past 30 days (Zhou et al., 2015). Overall, 75.8% of student nurses reported lifetime use of an ATP and 5.9% current use. Smoking by health professionals is a well-known obstacle to screening and tobacco cessation counseling with their patients. Reducing the use of ATPs among health professionals is an important priority (Fiore, 2008).

Higher rates of tobacco use were reported among participants' friends than among their family members for both undergraduate and graduate students. However, undergraduates were significantly more likely than graduate students to report that their friends smoked cigarettes and used ATPs, hookahs in particular ($p < .000$). Almost one third of undergraduates reported their friends smoked hookahs. More studies are needed to better understand the role of environmental factors and social norms that influence use of ATPs in settings such as hookah bars, in advertisements that portray ATPs as exotic and glamorous, and in student education about personal health.

The health consequences of tobacco use are well established and reflected by high mortality among smokers due to cardiovascular disease, respiratory diseases, and numerous cancers (U.S. Department of Health and Human Services, 2014). Further, a recent study reported excess mortality due to smoking tobacco in diseases not previously associated with smoking, such as renal failure, intestinal ischemia, and infections (Carter et al., 2015). New forms of products that include tobacco and nicotine delivery present new threats to the reduction in tobacco use achieved over the past several decades. Research and education of health professionals about the risks presented by these products is critical to reducing excess tobacco-related mortality.

This study has some notable limitations. It was conducted in a single urban university setting with a highly diverse student body. More studies of health professions students are needed to assess the best approaches to developing educational programs about associated health risks and personal use. Although the survey was anonymous, it was conducted in an academic setting, and participants may have given more socially desirable responses, therefore underestimating the extent of tobacco

product use. In addition, a number of participants who accessed the survey did not complete the entire survey. Reasons for this may include lack of knowledge or concerns about privacy, resulting in an underestimated knowledge gap or extent of tobacco use.

This study revealed a low level of awareness among nursing students about ATPs and their potential dangers to personal and consumer health. Nurses' lack of knowledge about the emerging use and health threats associated with ATPs may undermine their ability to provide appropriate tobacco cessation counseling.

Clinical Resource

- Centers for Disease Control and Prevention guidelines for smoking cessation: <http://www.cdc.gov/tobacco/campaign/tips/quit-smoking/>

References

- Akl, E. A., Gaddam, S., Gunukula, S. K., Honeine, R., Jaoude, P. A., & Irani, J. (2010). The effects of waterpipe tobacco smoking on health outcomes: A systematic review. *International Journal of Epidemiology*, 39(3), 834–857. doi:10.1093/ije/dyq002
- American Lung Association. (2007). *An emerging deadly trend: Waterpipe tobacco use*. Washington, DC: Author. Retrieved from http://www.lungusa2.org/embargo/slati/Trendalert_Waterpipes.pdf
- Braun, B. L., Fowles, J. B., Solberg, L. I., Kind, E. A., Lando, H., & Pine, D. (2004). Smoking-related attitudes and clinical practices of medical personnel in Minnesota. *American Journal of Preventive Medicine*, 27(4), 316–322.
- Brener, N. D., Collins, J. L., Kann, L., Warren, C. W., & Williams, B. W. (1995). Reliability of the Youth Risk Behavior Survey Questionnaire. *American Journal of Epidemiology*, 14(6), 575–580.
- Caponnetto, P., Campagna, D., Papale, G., Russo, C., & Polosa, R. (2012). The emerging phenomenon of electronic cigarettes. *Expert Review of Respiratory Medicine*, 6(1), 63–74. doi:10.1586/ers.11.92
- Carter, B. D., Abnet, C. C., Feskanich, D., Freedman, N. D., Hartge, P., ... Jacobs, E. J. (2015). Smoking and mortality—Beyond established causes. *New England Journal of Medicine*, 372, 631–640. doi:10.1056/NEJMsa147211
- CDC Foundation, World Health Organization, & World Lung Foundation. (2015). *The GATS Atlas: Global Adult Tobacco Survey*. Retrieved from <http://www.who.int/tobacco/publications/surveillance/gatstlas/en/>
- Centers for Disease Control and Prevention. (2012a). Consumption of cigarettes and combustible tobacco—United States, 2000–2011. *Morbidity and Mortality Weekly Report*, 61(30), 565–569. Retrieved from

- <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6130a1.htm>
- Centers for Disease Control and Prevention. (2012b). *Drop in cigarette consumption offset by increases in other forms of smoked tobacco*. Retrieved from http://www.cdc.gov/mediareleases/2012/p0802_tobacco_consumption.html
- Centers for Disease Control and Prevention. (2012c). Youth risk behavior surveillance—United States, 2011. *Morbidity and Mortality Weekly Report*, 63(Suppl. 4), 1–168. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/22673000>
- Cobb, C., Ward, K. D., Maziak, W., Shihadeh, A. L., & Eissenberg, T. (2010). Waterpipe smoking: An emerging crisis in the United States. *American Journal of Health Behavior*, 34(3), 275–285.
- Eissenberg, T., & Shihadeh, A. (2009). Waterpipe tobacco and cigarette smoking: Direct comparison of toxicant exposure. *American Journal of Preventive Medicine*, 37(6), 518–523. doi:10.1016/j.amepre.2009.07.014
- Fiore, M. C. (2008). A clinical practice guideline for treating tobacco use and dependence: 2008 update. A U.S. Public Health Service report. *American Journal of Preventive Medicine*, 35(2), 158–176. doi:10.1016/j.amepre.2008.04.009
- Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication Theory*, 15(2), 127–147. doi:10.1111/j.1468-2885.2005.tb00329.x
- Nawaz, H., Imam, S. Z., Zubairi, A. B. S., Pabaney, A. H., Sepah, Y. J., ... Khan, J. A. (2007). Smoking habits and beliefs of future physicians of Pakistan. *International Journal of Tuberculosis and Lung Disease*, 11(8), 915–919.
- Primack, B. A., Sidani, J., Agarwal, A. A., Shadel, W. G., Donny, E. C., & Eissenberg, T. E. (2008). Prevalence of and associations with waterpipe tobacco smoking among US university students. *Annals of Behavioral Medicine*, 36, 81–86. doi:10.1007/s12160-008-9047-6
- Rahman, S., Chang, L., Hadgu, S., Salinas-Miranda, A. A., & Corvin, J. (2014). Prevalence, knowledge, and practices of hookah smoking among university students, Florida 2012. *Preventing Chronic Disease*, 11, E214.1–E214.9. doi:10.5888/pcd11.140099
- Rice, V. H., & Stead, L. F. (2008). Nursing interventions for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 1, Article no. CD001188. doi:10.1002/14651858.CD001188.pub3
- Sarna, L., Bialous, S. A., Nandy, K., Antonio, A. L., & Yang, Q. (2014). Changes in smoking prevalences among health care workers from 2003 to 2010–2011. *Journal of the American Medical Association*, 311(2), 197–199. doi:10.1001/jama.2013.284871
- Sarna, L., Brown, J. K., Lillington, L., Wewers, M. E., & Brecht, M. L. (2000). Tobacco control attitudes, advocacy, and smoking behavior of oncology nurses. *Oncology Nursing Forum*, 27, 1519–1528. doi: 10.1002/10970142(20000815)89:4<881::AID-CNCR22>3.0.CO
- Senkubuge, F., Ayo-Yusuf, O. A., Louwagie, G. M., & Okuyemi, K. S. (2012). Water pipe and smokeless tobacco use among medical students in South Africa. *Nicotine & Tobacco Research*, 14(6), 755–760.
- Smith, D. R., & Leggat, P. A. (2007). An international review of tobacco smoking research in the nursing profession. *Journal of Research in Nursing*, 12, 165–181. doi:10.1177/1744871074875
- Ulbricht, S., Baumeister, S. E., Meyer, C., Schmidt, C. O., Schuman, A., ... John, U. (2008). Does the smoking status of general practitioners affect the efficacy of smoking cessation counseling? *Patient Education and Counseling*, 74, 23–28. doi:10.1016/j.pec.2008.07.047
- U.S. Department of Health and Human Services. (2014). *The health consequences of smoking—50 years of progress*. Retrieved from <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>
- Vanderhoek, A. J., Hammal, F., Chappell, A., Wild, T. C., Raupach, T., & Finegan, B. A. (2013). Future physicians and tobacco: An online survey of the habits, beliefs and knowledge base of medical students at a Canadian university. *Tobacco Induced Diseases*, 11(1), 9. Retrieved from <http://www.tobaccoinduceddiseases.com/content/11/1/9>
- Watson, C. H., Polzin, G. M., Calafat, A. M., & Ashley, D. L. (2003). Determination of the tar, nicotine, and carbon monoxide yields in the smoke of bidi cigarettes. *Nicotine & Tobacco Research*, 5(5), 747–753.
- Zhou, S., VanDevanter, N., Fenstermaker, M., Cawkwell, P., Sherman, S., & Weitzman, M. (2015). Medical students' use, knowledge and attitudes toward alternative tobacco products and cigarettes in one medical school. *Academic Medicine*, 90(12), 1713–1719. doi:10.1097/ACM.0000000000000873

Copyright of Journal of Nursing Scholarship is the property of Wiley-Blackwell and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.