

**TOBACCO USE AMONG NURSING STUDENTS: PREVALENCE, ATTITUDES AND
EDUCATION**

by

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University of Pittsburgh, 2014

Purpose: To describe the tobacco use behavior, attitudes, and training and curriculum of nursing students towards tobacco use. To examine if smoking status or progression through nursing school impacts attitudes and tobacco use.

Background: As the most trusted profession, nurses have great influence on his/her patient's health. Worldwide, tobacco use among health care professions students, especially nurses, varies greatly by country and region. In the United States, college aged students, including nursing students, have higher rates of intermittent (non-daily) smoking than daily smoking. Other forms of tobacco, including hookah and electronic cigarettes, are also becoming more popular.

Methods: This study used a descriptive survey adapted from the Global Health Professions Student Survey. Data was collected and managed using REDCap electronic data capture tools. Four baccalaureate schools of nursing granted permission to survey their students. A public survey link was emailed to a contact person at each school to forward to students. Participants were excluded if they were less than 18 years of age. Frequency and descriptive analysis was done using SPSS.

Results/Conclusions: The majority of participants were nonsmokers (79.4%), with 14.3% being intermittent smokers and 2.4% daily smokers. The majority of those who had experimented with cigarettes (48.4%) had first done so from 16-19 years of age (63.1%). Most

students agreed with the attitude questions regarding tobacco use and policy, and that healthcare professionals need specific training on tobacco cessation techniques. While 99% believed that healthcare providers have a role in giving out smoking cessation advice, only 24.5% had received formal cessation training. By the fourth year of school, less than half (45.9%) had received such training. Daily and intermittent smokers were the least likely to agree with smoking bans. The higher numbers of intermittent smokers suggest that students are willing to smoke occasionally and do not view occasional use as dangerous. Education on the dangers of tobacco use, including both cigarettes and other forms of tobacco, should come in middle school/high school before the students begin using those products. Nursing students do not have the proper training to educate their patients on tobacco cessation upon graduation from school.

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PREFACE

I would like to thank all those who helped and supported me along the way. First, I want to thank the Undergraduate Research Mentorship Program and my mentor, Maura McCall, for without this program and Maura's guidance, I would never have ventured into the research world. All of the students and staff in the Undergraduate Research Mentorship Program also gave me so much support throughout the process. A big thanks goes out to Jackie Dunbar-Jacob, PhD as both my research advisor and thesis chair, because without her help I would not have been able to conduct the research or have even known where to start in writing this thesis. I would like to thank Susan Sereika, PhD for taking the time to teach me SPSS, and Kathleen Kennedy for her support in the Center for Research and Evaluation. Finally, I would also like to thank my mom, dad, brother, and boyfriend for encouraging me to tackle this thesis.

1.0 INTRODUCTION

1.1 PURPOSE

Due to the quantity and quality of interactions with patients, nurses influence their patients' tobacco use. A nurse's current tobacco use, along with his or her knowledge from nursing school, may affect that nurse's behaviors in regards to tobacco cessation techniques for his/her patient (Wewers, Kidd, Armbruster, & Sarna, 2004). Currently, there is an abundance of research worldwide that look at tobacco prevalence and attitudes among healthcare professions students, with sections devoted to nursing students. However, very little research exists about nursing students in the United States, and there is little, if any, research examining correlations between tobacco use/attitudes and clinical experience. There is also a gap in the knowledge base on how advancement through the curriculum might impact students' tobacco use, or their knowledge regarding cessation. When the nursing students begin teaching their patients about the importance of smoking cessation, do they realize their own need to quit?

1.2 SPECIFIC AIMS

This study examined nursing students' use of cigarettes and other forms of tobacco, along with attitudes, cessation, and training. The specific aims of the study included:

1. Describe the tobacco use behavior of nursing students.
2. Describe attitudes of nursing students towards tobacco use.
3. Examine the training and tobacco cessation curriculum of nursing students.

1.2.1 Secondary aims

Secondary aims of the study included:

1. Examine if smoking status impacts attitudes towards use and policy.
2. Examine if progression through nursing school impacts tobacco use and beliefs.
3. Examine if age of first cigarette use impacts current tobacco use.

2.0 BACKGROUND

In the United States, the current smoking rate for adults is 22%, and for youth aged 12-17 is 6.6%. As education level increases, smoking rates decrease, and those below the poverty have the highest rate of smoking, at 32.5%. Tobacco use causes many adverse health effects, including respiratory disease, cardiovascular disease, cancers, and decreased reproductive health ("The Health Consequences of Smoking: 50 Years of Progress," 2014). A study of electrocardiogram changes in otherwise healthy smoking and non-smoking men, aged 18-30, found that the smokers had higher heart rates, and shortened RR interval, QT interval, and ST segment. This increases the likelihood of ischemia and arrhythmias in the smoking population (Devi, Arvind, & Kumar, 2013). Smoking also decreases the forced expiratory volume and forced expiratory capacity in those who smoke more than 10 cigarettes a day (Jawed, Ejaz, & Rehman, 2012). Tobacco use also costs the United States over 280 billion dollars each year. Direct medical care accounts for 133 billion dollars, and the rest is a result of decreased productivity of workers ("Fast Facts," 2013).

2.1 WORLDWIDE PREVALENCE OF SMOKING IN HEALTH PROFESSIONS STUDENTS

Tobacco use varies greatly worldwide based on country. Currently, the CDC has conducted several studies worldwide regarding health care professions student's attitudes and behaviors towards tobacco use, with specific research about nursing students. According to the pilot study for the Global Health Professions Student Survey (GHPSS), 41.5% of third year nursing students in 10 countries are current smokers. Of the nursing students in the survey, 89.4% believed health professionals should teach their patients about smoking cessation and 96.7% believed they should be trained in smoking cessation, but only 22.6% actually received formal training ("Tobacco use and cessation counseling--global health professionals survey pilot study, 10 countries, 2005," 2005).

In Nigeria, 5.04% of nursing and pharmacy students were current smokers, with 17.9% reporting ever smoking. While 93% were taught about the dangers of tobacco use, only 48.6% had heard of using antidepressants for tobacco cessation (Awopeju et al., 2013). Laos had similar results, with 5% tobacco prevalence in third year healthcare profession students. Only 10% of nursing students received training in tobacco cessation, compared to 51.1% of medical students (Sychareun et al., 2013). Maori nurses in New Zealand had a smoking rate of 20%, and 32% of student nurses smoke (Gifford, Wilson, Boulton, Walker, & Shepherd-Sinclair, 2013). In Greece, 33% of nursing students were current smokers, and 74% reported having experimented with smoking (Patelarou et al., 2011).

2.2 UNITED STATES

2.2.1 College Students

Many different factors affect the smoking status of college students. Students who begin smoking during college may have increased alcohol use as well (Myers, Doran, Edland, Schweizer, & Wall, 2013). Students in fraternities and sororities are also at a higher risk of using tobacco products, along with alcohol and other substances (Cheney, Harris, Gowin, & Huber, 2014). Students who use cigarettes are also likely to use other tobacco products, and are at a higher risk for nicotine dependence and continuation (Latimer, Batanova, & Loukas, 2013). To decrease the secondhand smoke effects, many universities have created designated smoking areas, while the rest of the campus is smoke free. As a result, students who do smoke report an increased reward of smoking in these areas, as they are able to socialize with other smokers (Lochbihler, Miller, & Etcheverry, 2013). In a study conducted at a mid-Atlantic university, 3.4% of all students were found to be daily smokers, while 71.5% were considered nonsmokers. The rest of the students were placed into different categories based on the frequency of smoking over time (Caldeira et al., 2012). In the northeast, the average tobacco prevalence for all people ages 18-25 was 31.7% ("The Health Consequences of Smoking: 50 Years of Progress," 2014).

2.2.2 Nursing Students

In the United States, a 2003 study involving nursing students at Ohio State University found that 6% of student nurses were current smokers, and many who did identify as smokers claimed they only did so in certain situations. The students who currently smoked were less likely to believe that it was a nurse's professional responsibility to counsel their patient on smoking cessation techniques (Jenkins & Ahijevych, 2003). A 2008 study in Minnesota also found small numbers of nursing students who reported themselves as current smokers, at 7.9%. However, 17.9% of the BSN student respondents described using tobacco products within the past 30 days (Lenz, 2008).

2.3 OTHER FORMS OF TOBACCO

2.3.1 Hookah

Worldwide, hookah, also known as water pipe smoking, has been popular in different cultures and countries. A GHPSS survey conducted in Lebanon found 29.5% of 6th year medical students reported water pipe use, compared to 26.3% who used cigarettes (Jradi, Wewers, Pirie, Binkley, & Ferketich, 2013). In Jordan among youths aged 11-18, girls had a higher rate of water pipe smoking, at 64%, than did boys, at only 36% (Alzyoud, Weglicki, Kheirallah, Haddad, & Alhawamdeh, 2013).

Hookah is becoming increasingly popular in the United States. From 2007-2012, a study of Florida high school students found an increase of hookah use. In 2007, 16.2% of 12th grade students had reported ever using hookah, and in 2012 that number had increased to 26.1% (Barnett, Forrest, Porter, & Curbow, 2014). A 2014 study across several cities of the United States found that college students and graduates had higher rates of hookah use compared to their non-college counterparts. The participants that reported current hookah use were likely to also use cigarettes, at 77.4%. Respondents who had negative attitudes towards the tobacco industry were also more likely to use hookah (Lee, Bahreinifar, & Ling, 2014).

Adolescents and young adults in the United States have largely been misinformed about the dangers of hookah use, compared to cigarette smoking. Hookah still has many of the same risks as cigarettes, such as respiratory diseases, lung cancer, low birth weight in pregnancy, and periodontal disease (Akl et al., 2010). College students have reported there is a smaller potential for addiction and harm from hookah, and find a higher approval socially, compared to cigarettes. Hookah users also had higher rates of cigarette, alcohol, and marijuana use (Heinz et al., 2013).

2.3.2 Smokeless Tobacco

Many people who use smokeless tobacco products also use cigarettes. Smokeless tobacco, both alone and in conjunction with cigarettes, is popular among blue collar workers (Noonan & Duffy, 2014). Smokeless tobacco is an issue worldwide as well. For example, 23.7% of students from a university in Iran reporting previous use and 11.4% were current users.

Smokeless tobacco is dangerous due to the high rates of oral cancer associated with its use (Honarmand, Farhadmollashahi, & Bekyghasemi, 2013).

2.3.3 Electronic Cigarettes

Electronic cigarettes (e-cigarettes) are becoming an increasingly popular method for current cigarette smokers to quit. E-cigarettes vaporize nicotine and other chemicals through a battery operated device for inhalation. While many are attempting to quit smoking traditional cigarettes with e-cigarettes, studies have not shown a significantly higher success rate, when compared to other traditional cessation methods. In addition, the FDA does not currently regulate e-cigarettes, however they do have the authority to regulate e-cigarettes as a tobacco product. E-cigarettes may also have health risks that are unknown at this time because of a lack of research. In the United States, e-cigarettes have flavorings and advertisements that may lead to use by children, particularly since there are no federal laws on minimum purchase age. This may lead to earlier nicotine dependence in children (Gordon, 2014).

In college students, even students who previously did not smoke are increasingly using e-cigarettes. While older tobacco users are more likely to use e-cigarettes as a cessation technique, college students were less likely to use the products with intent to quit (Sutfin, McCoy, Morrell, Hoepfner, & Wolfson, 2013).

2.4 TOBACCO IN THE NEWS

Due to the fast-paced nature of nursing, it can be very difficult for nurses to find time during the day to take breaks. A recent research study of nurses from Magnet hospitals across the United States found that 70% of nurses frequently miss breaks. However, when it compared the smoking nurses and non-smoking nurses, it found that 71.6% of non-smoking nurses frequently or always missed their breaks, and only 58.9% of smoking nurses reported the same (Sarna et al., 2009). Earlier research found that many nurses perceived smokers as being able to take more breaks (Sarna, Bialous, Wewers, Froelicher, & Danao, 2005). Smoker protection laws have been passed in 29 states to prevent discrimination against workers for their smoking status. This means that hospitals cannot fire a worker or refuse to hire a worker on the grounds that they smoke (Warner, 2013). However, in states where these laws do not exist, hospital corporations are enacting strict anti-smoking policies. A local hospital system, beginning in July 2014, will no longer allow its hospital workers, including medical students and contractors, to take smoking breaks. The policy also includes unpaid lunch breaks, and other tobacco forms such as smokeless tobacco and electronic cigarettes (Toland, 2013). Other prominent hospital systems now will not hire a worker if they claim to smoke, or in some cases test positive with a nicotine swab. This policy does not extend to smokers already hired when the policy was put into place (Warner, 2013).

CVS/pharmacy, the second largest pharmacy chain in the United States, recently announced its plan to stop selling all tobacco products in October 2014. It will be the first of its kind to implement such a plan, and will cost the pharmacy an estimated 2 billion dollars in lost

revenue. President and CEO Larry J. Merlo stated, “Ending the sale of cigarettes and tobacco products at CVS/pharmacy is the right thing for us to do for our customers and our company to help people on their path to better health,” (Landau, 2014). CVS/pharmacy will continue to offer tobacco cessation products such as nicotine patches and gum, however it currently does not sell electronic cigarettes. The company also plans to launch a tobacco cessation program through their pharmacies and Minute Clinic locations. The Obama administration, American Cancer Society, and the American Nurses Association, among others, have praised these actions (Landau, 2014).

A study in 2001 found that most minors received their tobacco products from family or friends, or found stores that would sell to minors (DiFranza & Coleman, 2001). New laws are cracking down on tobacco sales to minors, and some areas of the countries are now enacting Tobacco 21 laws. New York City just enacted its own Tobacco 21 law, that as of May 2014 will make it illegal for shops in New York City to sell tobacco to anyone less than 21 years of age. This does not make it illegal to possess tobacco by someone between the ages of 18-21. Since the majority of adult smokers begin before the age of 20, and many minors receive their tobacco from their friends, who are under the age of 21, restricting sales to those over 21 years of age may have a significant impact on the smoking prevalence of future generations (Winickoff, Gottlieb, & Mello, 2014).

3.0 METHODS

In the wake of significant policy and practice movements to restrict tobacco use, it is reasonable for nurses to use their presence and “most trusted profession” role to influence the smoking behavior of persons under their care (Gallup, 2013). It is the purpose of this study to examine tobacco prevalence, attitudes, and education among nursing students.

3.1 DESIGN

This descriptive study used a cross sectional survey adapted from the Global Health Professions Student Survey (GHPSS) to assess the smoking exposure, attitudes, and beliefs of nursing students. Worldwide, this survey was used on third year health professions students, from medical, dental, pharmacy, and nursing schools. A copy of the core survey questions was downloaded from the CDC website, and email permission was received from the CDC. The survey is grouped into 6 sections: demographics, tobacco use prevalence, environmental exposure, attitudes, behavior/cessation, and curriculum/training. The tobacco use prevalence section was divided into sections for cigarettes and other forms of tobacco, and a comments section was added at the end.

“Study data were collected and managed using REDCap electronic data capture tools, hosted through CTSI at the University of Pittsburgh. REDCap (Research Electronic Data Capture) is a secure, online application designed to support data capture for research studies, providing an intuitive interface for validated data entry, audit trails for tracking data manipulation and export procedures, and automated export procedures for seamless data downloads to common statistical packages” (Harris et al., 2009). After editing the survey into the correct formatting and rewording questions to be relevant to the geographic location, the survey (see Appendix A) was uploaded into REDCap. Branching logic, a function of REDCap, allows for certain questions to be included in the survey or skipped based on the answers to previous questions. This was used for several questions relating to tobacco use. Participants were also able to skip questions. IRB approval (PRO13010231) was received on February 25th, 2013. Four baccalaureate schools of nursing in the local area were identified and contacted for permission to survey their students. Permission was received from each school’s dean, who then gave the name and email of a contact person at the school to forward the survey to students.

3.2 SAMPLE

A public survey link was included in an email with the introductory script (see Appendix B). This email was forwarded to email contacts at each of the schools, to then be forwarded to their undergraduate nursing students. Four schools participated in the study. Participation was voluntary and anonymous, and participants had the ability to withhold answers to questions. An

initial question, “Are you 18 years of age or older?” was included, and any respondent that answered no would be immediately brought to the end of the survey without the ability to answer any additional questions. The survey link was available from March 27th through April 25th. During that time, a total of 456 participants opened the link and responded.

3.3 ANALYSIS

Frequency and descriptive analysis was done using SPSS. Hypothesis testing used chi-square test or Fisher’s exact test and crosstabs with significance set at <0.05 . Surveys with no responses were automatically deleted.

3.3.1 Definition of Smoking Status

Smoking status was defined based on three questions in the survey (see Appendix A). If respondents answered no to “Have you ever tried or experimented with cigarette smoking, even one or two puffs?” and answered that they “never smoked or only tried a few puffs” to the current smoking status question, they were deemed a non-smoker. Current daily smokers were those who called themselves a current smoker or smoked all 30 days of the past month. Former smokers had smoked zero days in the past month and classified themselves as a former smoker (either quit less than or more than one year ago). Intermittent smokers answered that they only smoked in certain situations or smoked 1-29 days of the past month.

3.4 DEMOGRAPHICS

A total of 420 participants were included in this analysis. The mean age of participants was 21 years (range 18-55, SD \pm 3.75). The majority of the group was female (91.4%), enrolled in a traditional BSN program (91.6%), with clinical experience (69.8%).

Table 1. Demographics

	Frequency	Percent
Gender (n=418)		
Male	36	8.6
Female	382	91.4
Course Year (n=419)		
First Year	111	26.5
Second Year	85	20.3
Third Year	101	24.1
Fourth Year	91	21.7
Fifth Year or More	31	7.4

Table 2. School Setting

	Frequency	Percent
Nursing School (n=420)		
School 1	62	14.8
School 2	56	13.3
School 3	65	15.5
School 4	237	56.4
Program Type (n=418)		
Traditional BSN	383	91.6
Accelerated/2 nd degree BSN	28	6.7
RN options/RN to BSN	7	1.7
Clinical Experience (n=420)		
Yes	293	69.8
No	127	30.2

4.0 RESULTS

4.1 PREVALENCE OF TOBACCO USE

4.1.1 Smoking

The majority of participants were non-smokers (79.4%). It was more common for participants to report being intermittent smokers than daily smokers (14.3% vs. 2.4%, respectively). Almost half (48.4%) had experimented with cigarette smoking at some point in their lifetime. Of those who had smoked (n=201), participants were most likely to have first tried a cigarette from 16-19 years old (63.1%). There were no significant differences between schools for smoking status (Fisher's Exact Test = 9.312, p = 0.356). School 4 had a significantly greater number of 4th year students, compared to the other schools ($\chi^2 = 18.537$, df = 4, p = 0.001).

Table 3. Smoking Prevalence

	Frequency	Percent
Have you ever tried or experimented with cigarette smoking, even one or two puffs? (n=411)		
Yes	199	48.4
No	212	51.6
How old were you when you first tried a cigarette? (n=414)		
I have never smoked cigarettes	213	51.4
Age 10 or younger	2	0.5
10-15	50	12.1
16-17	63	15.2
18-19	64	15.5
20-24	22	5.3
During the past 30 days (one month), on how many days did you smoke cigarettes? (n=201)		
0 days	141	70.1
1 or 2	20	10.0
3 to 5	9	4.5
6 to 9	3	1.5
10 to 19	6	3.0
20 to 29	12	6.0

All 30 days	10	5.0
Smoking Status (n=412)		
Non-smoker	327	79.4
Current daily smoker	10	2.4
Former smoker	16	3.9
Intermittent smoker	59	14.3

4.1.2 Other forms of tobacco

Over half of the participants reported experimentation with other forms of tobacco (53.8%). Of the 220 participants who had experimented with other forms of tobacco, 83.1% reported their first use occurring between 16-19 years of age. The majority of participants who reported experimentation with other forms of tobacco had not used any of those products in the past 30 days (77.5%).

Table 4. Other Forms of Tobacco Prevalence

	Frequency	Percent
Have you ever used or experimented with other forms of tobacco (not including cigarettes), including chewing tobacco, snuff, bidis, cigars, hookah or pipes, even if it was just once? (n=409)		
Yes	220	53.8
No	189	46.2
How old were you when you first tried other forms of tobacco? (n=410)		
I have never used other forms of tobacco	190	46.3
10-15	16	3.9
16-17	75	18.3
18-19	108	26.3
20-24	21	5.1
During the past 30 days (one month), on how many days did you use other forms of tobacco (not including cigarettes)? (n=218)		
0 days	169	77.5
1 or 2	39	17.9
3 to 5	4	1.8
6 to 9	1	0.5
10 to 19	2	0.9

20 to 29	1	0.5
All 30 days	2	0.9

4.2 ATTITUDES TOWARDS TOBACCO POLICY

The majority of participants had negative attitudes towards tobacco use and policies. Many believed tobacco sales to adolescents (89.3%), smoking in restaurants (95.3%), and smoking in all enclosed public places (82.8%) should be banned; fewer believed that nightclubs/bars should be smoke free (72.7%) or that there should be a complete ban of advertising of tobacco products (65.4%).

Table 5. Attitudes

Question	Yes	No
Should tobacco sales to adolescents (persons younger than 18 years old) be banned? (n=403)	360 (89.3)	43 (10.7)
Should there be a complete ban of the advertising of tobacco products? (n=402)	263 (65.4)	139 (34.6)
Should smoking be banned in restaurants? (n=401)	382 (95.3)	19 (4.7)
Should smoking be banned in night clubs/bars/pubs? (n=403)	293 (72.7)	110 (27.3)
Should smoking in all enclosed public places be banned? (n=401)	332 (82.8)	69 (17.2)

4.3 EDUCATION ON SMOKING CESSATION

Most respondents reported that health care professionals should get specific training on cessation techniques (92.8%), and 99% believed healthcare providers have a role in giving smoking cessation advice to their patients. Only 24.5% of participants reported actually receiving formal training in smoking cessation techniques. While 93.7% knew about nicotine replacement therapies, much smaller numbers knew about using other pharmacologic strategies (44.4%), and non-pharmacologic strategies (48.4%).

Table 6. Attitudes towards Tobacco Cessation

Question	Yes	No
Should nurses and other health care professionals get specific training on cessation techniques? (n=403)	374 (92.8)	29 (7.2)
Do nurses and other health care professionals serve as role models for their patients and the public? (n=400)	368 (92)	32 (8)
Should nurses and other health care professionals routinely advise their smoking patients to quit? (n=403)	375 (93.1)	28 (6.9)
Should nurses and other health care professionals routinely advise their patients who use other tobacco products to quit? (n=401)	359 (89.5)	42 (10.5)
Do nurses and other health care professionals have a role in giving advice or information about smoking cessation to patients? (n=402)	398 (99)	4 (1.0)
Are a patients chances of quitting increased if a nurse or other health care professional advises him or her to quit? (n=402)	332 (82.6)	70 (17.4)
Are health care professionals who smoke less likely to advise their patients to quit? (n=400)	333 (83.3)	67 (16.8)
Are health care professionals who use other tobacco products less likely to advise patients to stop smoking or using those products? (n=399)	316 (79.2)	83 (20.8)

Table 7. Education

Question	Yes	No
During your nursing school education, were you taught in any classes about the dangers of tobacco use? (n=381)	323 (84.8)	58 (15.2)
During your nursing school education, did you discuss in any of your classes the reasons why people use tobacco? (n=383)	232 (60.6)	151 (39.4)
During your nursing school education, were you taught to include tobacco use in assessing the patients general medical history? (n=381)	320 (84.0)	61 (16.0)
During your nursing school education, have you ever received any formal training in smoking cessation approaches to use with patients? (n=380)	93 (24.5)	287 (75.5)
During your nursing school education, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit? (n=376)	283 (75.3)	93 (24.7)
Have you ever heard of using nicotine replacement therapies in tobacco cessation programs (such as nicotine patch or gum)? (n=381)	357 (93.7)	24 (6.3)
Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)? (n=378)	168 (44.4)	210 (55.6)
Have you ever heard of using non-pharmacological strategies in smoking cessation programs? (n=380)	184 (48.4)	196 (51.6)

4.4 SECONDARY AIMS

4.4.1 Is smoking status associated with attitudes towards smoking policies?

Intermittent smokers were less likely to agree to a complete ban of tobacco advertising ($\chi^2 = 12.136$, $df = 3$, $p = 0.007$). Daily and intermittent smokers were more likely to disagree with a smoke ban for restaurants ($\chi^2 = 24.869$, $df = 3$, $p < 0.001$). Non-smokers and former smokers were more likely to agree with a smoking ban in pubs, nightclubs and bars ($\chi^2 = 72.274$, $df = 3$, $p < 0.001$), and in all enclosed public places ($\chi^2 = 52.977$, $df = 3$, $p < 0.001$).

Participants of all smoking statuses had similar opinions that nurses should receive specific training on cessation techniques, and should routinely advise their patients to quit smoking. However, current daily smokers were less likely to believe that nurses and health care providers should counsel their patients to stop using other forms of tobacco ($\chi^2 = 12.452$, $df = 3$, $p = 0.006$). Current daily smokers also were less likely to think that they served as a role model for their patients and the public ($\chi^2 = 11.603$, $df = 3$, $p = 0.009$). Just 4 participants (all from the non-smoking group) did not believe that nurses and health care professionals have a role in giving advice about smoking cessation. Only 50% of current daily smokers believed a patient would be more likely to quit if his/her nurse or health care professional advised him/her to do so ($\chi^2 = 8.600$, $df = 3$, $p = 0.035$).

4.4.2 Education of nursing students on smoking cessation

Only 57% of first year students were taught about the dangers of tobacco use, compared with 89.7%, 95.5% and 97.6% of second, third and fourth year students, respectively ($\chi^2 = 82.899$, $df = 4$, $p < 0.001$). Also among first year students, 54.6% were taught to include tobacco use in general patient assessments, compared to over 85% for all other years ($\chi^2 = 85.719$, $df = 4$, $p < 0.001$). First and second year students were much less likely to have discussed the reasons why people use tobacco ($\chi^2 = 55.112$, $df = 4$, $p < 0.001$). Only 7.1% of first year students had received formal tobacco cessation training, and by the fourth year of nursing school only 45.9% had received any training ($\chi^2 = 39.003$, $df = 4$, $p < 0.001$). By the second year of school, over 80% of students had learned to provide educational materials to support their smoking patients ($\chi^2 = 114.08$, $df = 4$, $p < 0.001$). First year students were also less likely to know about nicotine replacement therapies ($\chi^2 = 18.614$, $df = 4$, $p = 0.001$). Only half (54.1%) of fourth year students knew about antidepressant use in nicotine therapy, and less than 30% of first year students were aware ($\chi^2 = 16.211$, $df = 4$, $p = 0.003$).

4.4.3 Impact of first cigarette use on current smoking status

Participants who first tried a cigarette from ages 16-17 were more likely to be an intermittent smoker or a non-smoker. Current daily smokers had all first tried cigarettes between ages 10-15 (Fisher's Exact Test = 146.069, lower bound $p < 0.001$, upper bound $p < 0.001$).

5.0 DISCUSSION

5.1 TOBACCO USE BEHAVIOR

Comparing nursing students to the greater population of college students, this study found smaller numbers of daily smokers (2.4% vs. 3.4%) and higher numbers of nonsmokers (79.4% vs. 71.5%) (Caldeira et al., 2012). This was expected due to the overall increased knowledge of health outcomes in nursing students. While the number of daily smokers was quite low, the overall number of smokers (those who had smoked in the past month) was 16.7%. Regionally, these data suggest much lower smoking rates as compared to the 31.7% of persons in approximately the same age range of 18-25. This statistic may be inflated compared to the sample of nursing students, since higher education level decreases smoking rate ("The Health Consequences of Smoking: 50 Years of Progress," 2014).

5.1.1 Intermittent smokers

The higher numbers of intermittent smokers in this study suggest while most nursing students do not smoke, many are willing to smoke occasionally, and do not view occasional tobacco use as dangerous. One participant wrote in the comments section,

I think occasional tobacco use is okay as long as you live an otherwise healthy lifestyle. Over-processed and fatty foods are worse for Americans than an occasional cigarette. An addiction to anything, be it alcohol, food, or tobacco, is equally unhealthy.

This viewpoint, that tobacco can be as unhealthy as alcohol or food, is interesting, especially when considering the obesity epidemic in the United States. Another participant had similar views,

I only smoke when I am stressed out so only during the school year, over the summer or on breaks I do not even crave a cigarette. Also, just because I smoke it does not mean that I do not want to quit. I will still tell my patients how it could harm them and that it would be a good idea for them to quit. This is because I understand the dangers and the risks I am taking but I still do it. Everyone has the right to know what they [sic] are doing to their body and the dangers but after that it is solely [sic] up to them to choose.

This participant, who smokes as a stress reliever, reports smoking in spite of the health risks, as the benefits outweigh the potential health risks. Many intermittent smokers believe that what separates them from daily smokers is the ability to quit smoking at any time (Berg et al., 2013). This may make intermittent smoking more popular for nursing students, since they would feel that they aren't actually addicted to nicotine.

5.1.2 Other forms of tobacco

More nursing students reported experimentation with other forms of tobacco than with smoking. Because the majority of those who had tried other forms of tobacco did so between 16-19 years

of age, primary education should focus on prevention in late middle school and early high school years. The popularity of other forms of tobacco may be a result of the popularity of hookah bars as a weekend activity for college students, especially for those who are not yet old enough to go out to bars and clubs with their friends.

5.2 ATTITUDES

Many of the attitudes shared by the nursing students surveyed were negative towards tobacco use. However, it also seemed that participants were more likely to disagree with a survey question when it contradicted current policies and laws for the geographical area. Pennsylvania has laws against smoking in some restaurants, but not in bars and casinos. It should also be noted that more participants agreed with a ban on smoking in all public enclosed places than in clubs, bars and pubs, even though bars, pubs and nightclubs are considered public enclosed places.

The largest split in attitudes came during the question on tobacco advertising. The disparity was likely a result of the strong wording of the question. Students may not feel that tobacco advertising has as much of an effect as it used to, when ads suggested that doctors smoked and it could help women lose weight. However, a study on reactions to pro-smoking advertisements found that the effects of these advertisements can increase the intention to smoke and decrease refusal self-efficacy for seven days (Setodji, Martino, Scharf, & Shadel, 2013).

5.3 EDUCATION

Education is vital for nurses, as the skills learned throughout nursing school impact the way nurses educate their patients. In turn, this affects patient outcomes and health behaviors for all age groups. Due to the variety of specialties in nursing, nurses can be in the hospital counseling their middle-aged patient to quit, in a middle school teaching the students about the dangers of tobacco use, or in an out patient setting, counseling a young pregnant woman about the effects of tobacco on her fetus. The nurse teaching her patient could impact not only that patient, but also their families and friends to either quit smoking or not begin using tobacco in the first place. The American Nurses Association supports Tobacco Free Nurses, an organization that supports nurses in their ability to counsel patients about their tobacco use ("Tobacco Free Nurses," 2014). If each nurse practicing in the United States could assist one patient per year to quit smoking, over 3 million additional people would be tobacco free each year ("American Nurses Association," 2014).

Based on these data, less than half of nursing students had received any formal training in tobacco cessation techniques by their fourth year of nursing school. While the students understood the need to provide education materials for smoking patients, they did not have the knowledge of other tobacco cessation techniques. In a study of nursing faculty, the faculty reported a lack of knowledge in tobacco cessation methods that interfered with teaching their students. However, they did realize the opportunity for students to partake in tobacco cessation with their patient's throughout nursing school (Lenz, 2013). For most fourth year students, this

survey would have been sent out during their final months of nursing school, so those students would likely go into the working field with no real training.

A study of nurses found that only 57% of nurses provided tobacco cessation interventions to their patients. Once the nurses were trained in a specific tobacco cessation program, they reported delivery of interventions at a much higher rate of 86%, 15 months after the training occurred (Fore, Karvonen-Gutierrez, Talsma, & Duffy, 2014). A Canadian study of 36 different hospital systems found that the staff nurses were responsible for 69% of tobacco interventions. Each hospital system also had a different for screening for tobacco use (Smith, Cobb, & Corso, 2013). The fourth year students also had limited knowledge about non-nicotine replacement therapies for their patients. Once they graduate, their lack of knowledge may lead to ambiguous or confusing information for their patients looking to quit, resulting in a failed attempt. Furthermore, this could discourage a patient from looking for advice from other nurses in the future, or making another attempt to quit. Even those students who did learn about tobacco cessation techniques may not be comfortable in assessing and educating their patient in the clinical setting. By adding more education earlier in the curriculum, the process of interviewing and educating their patient would become easier, and more likely to be implemented in the future.

People use tobacco for a variety of reasons. Because 39.4% of students had not learned about the reasons why people use tobacco, they may not think to assess that along with their patient's assessment. In cancer patients, those who quit smoking did so because they felt the benefits outweighed the risks, while patients that continued to smoke did so because the barriers outweighed the benefits (Li, Chan, & Lam, 2014). Fully assessing a patient's smoking status and

attitudes may help tailor a nurse's approach to tobacco cessation with that patient. In addition, nurses may have to counsel not only their patient, but also the family members, especially in pediatric populations where the smoking status of the parents can greatly affect the health of the child. A U.S. study found that less than half of all pediatric nurses asked, informed, advised, or counseled their patient's parents about tobacco use (Blaine et al., 2014).

5.4 LIMITATIONS

Limitations arose as a result of the methods of the study. All responses were self-reported. There may be a response bias. As there was no way to link responses to the participants, reasons for omitting answers cannot be determined. The geographic area of the study may also have an effect on the results. While there were no differences among colleges (three of which are located in an urban environment, the fourth is located in a more suburban setting), tobacco use varies in the U.S. by region and may affect both prevalence and attitudes of the population surveyed.

5.5 FURTHER RESEARCH

Further research should be done in other geographical locations to determine how regions affect prevalence and attitudes towards tobacco use. Equally important would be a study on different levels of nursing education, from diploma prepared registered nurses to graduate level nurses to determine whether there are differences by education type. The survey should also be adjusted

to better determine smoking status of the participants. Additional questions should be added to examine other forms of tobacco, such as the specific type of tobacco used and if participants were former users. Research may also want to compare attitudes and knowledge of students before and after an education session on tobacco cessation.

6.0 CONCLUSION

Nursing students remain an important group to study regarding tobacco use. Understanding tobacco use and attitudes in nursing students can improve tobacco cessation education programs, which can impact patients in broad populations around the world. While smaller numbers of nursing students use tobacco as compared to the general population, students still continue to smoke and use other tobacco products. With increasing focus on tobacco as a result of new policies, both in hospital systems and nationwide, there may be more pressure on nurses and nursing students to remain tobacco free.

Many students, even though they realize the need to educate patients regarding tobacco use, do not have the capabilities to do so upon graduation. Nursing schools should revise their curriculum regarding tobacco education, providing it earlier during schooling to provide students more practice and to increase the influence of students. As patients continue to smoke, nurses will continue to be needed to ask, inform, and advise their patients about the dangers of tobacco use.

APPENDIX A

TOBACCO SURVEY

Please complete the survey below.

You must be 18 years or older to take this survey. Only select one answer for each question.

Choose the answer that best describes what you believe and feel to be correct.

Thank you!

Adapted from the Global Health Professions Student Survey.

Are you 18 years of age or older? ** Yes

No

Demographics

How old are you?

What is your gender?

Female

What is your course year in school?

- Male
- First year
- Second Year
- Third Year
- Fourth Year
- Fifth Year
- Sixth Year
- Seventh Year
- Other

If other, please explain:

What nursing school do you currently attend? **

- [School 1]
- [School 2]
- [School 3]
- [School 4]
- Other

If other, please explain.

What type of program are you enrolled in? **

- Traditional BSN
- Accelerated/2nd degree BSN
- RN options/RN to BSN
- Other

If other, please explain.

Have you had any clinical experience in nursing school so far? ** Yes

No

Cigarette Use Prevalence

Have you ever tried or experimented with cigarette smoking,
even one or two puffs?

Yes

No

How old were you when you first tried a cigarette?

I have never smoked cigarettes

Age 10 or younger

10-15

16-17

18-19

20-24

25-29

30 or older

During the past 30 days (one month), on how many days
did you smoke cigarettes?

0 days

1 or 2

3 to 5

6 to 9

10 to 19

20 to 29

Have you smoked cigarettes on school premises/property during the past year?

All 30 days

Yes

No

Have you smoked cigarettes in school buildings during the past year?

Yes

No

Other Types of Tobacco Use Prevalence

Have you ever used or experimented with other forms of tobacco (not including cigarettes), including chewing tobacco, snuff, bidis, cigars, hookah or pipes, even if it was just once? *

Yes

No

How old were you when you first tried other forms of tobacco? **

I have never used other forms of tobacco

Age 10 or younger

10-15

16-17

18-19

20-24

	25-29
	30 or older
During the past 30 days (one month), on how many days	0 days
did you use other forms of tobacco (not including	1 or 2
cigarettes)?*	0 days
	1 or 2
	3 to 5
	6 to 9
	10 to 19
	20 to 29
	All 30 days

Have you ever used other forms of tobacco (not including cigarettes) on school premises/property during the past year?*	Yes
	No

Have you ever used other forms of tobacco (not including cigarettes) in school buildings during the past year? *	Yes
	No

Exposure to Environmental Tobacco Smoke

Do you live on campus? **	Yes
---------------------------	-----

	No
What type of housing do you live in? **	Dormitory
	Apartment building
	Townhouse
	Duplex or triplex/Multi family home
	Single family home
During the past 7 days, on how many days have people smoked where you live, in your presence?	0 days
	1 to 2
	3 to 4
	5 to 6
	All 7 days
During the past 7 days, on how many days have people smoked in your presence, in places other than where you live?	0 days
	1 or 2
	3 to 4
	5 to 6
	All 7 days
Does your school have an official policy banning smoking in school buildings, dormitories and clinics	

(Is your campus smoke-free)? *

Yes - school buildings and dormitories only

Yes for clinics only

Yes for school buildings, dormitories and clinics

No official policy

I do not know

Is your school's official smoking ban for school buildings, dormitories and clinics enforced? *

Yes policy is enforced

No policy is not enforced

School has no official policy

I do not know

Attitudes

Should tobacco sales to adolescents (persons younger than 18 years old) be banned? Yes

No

Should there be a complete ban of the advertising of tobacco products? Yes

No

Should smoking be banned in restaurants? Yes

No

Should smoking be banned in night clubs/bars/pubs? *

No

Should smoking in all enclosed public places be banned? Yes

No

Should nurses and other health care professionals get specific training on cessation techniques? Yes

No

Do nurses and other health care professionals serve as "role models" for their patients and the public? Yes

No

Should nurses and other health care professionals routinely advise their smoking patients to quit? Yes

No

Should nurses and other health care professionals routinely advise their patients who use other tobacco products to quit? Yes

No

Do nurses and other health care professionals have a role in giving advice or information about smoking cessation to patients? Yes

No

Are a patient's chances of quitting increased if a nurse or other health care professional advises him

or her to quit?

Yes

No

Behavior/Cessation

What is your current smoking status? **

Never smoked or only tried a few puffs

Current smoker

Former smoker - quit less than one year ago

Former smoker - quit over one year ago

Only smoke in certain situations

How soon after you awake do you smoke your first
cigarette?

Less than 10 minutes

10-31 minutes

31-60 minutes

After 60 minutes

Do you want to stop smoking cigarettes now? *

Yes

No

During the past year, have you ever tried to stop
smoking cigarettes? *

Yes

No

Have you ever received help or advice to help you
stop smoking cigarettes? *

Yes

No

How long ago did you stop smoking cigarettes? *

Less than 1 month

1-5 months

6-11 months

1 year

2 years

3 years or longer

Do you want to stop using chewing tobacco, snuff,
bidis, cigars, hookah or pipes now?

I have never used any of these products

I currently do not use any of these products

Yes

No

Are health care professionals who smoke less likely
to advise their patients to quit?

Yes

No

Are health care professionals who use other tobacco
products less likely to advise patients to stop
smoking or using those products?

Yes

No

Curriculum/Training

During your nursing school education, were you taught in any classes about the dangers of tobacco use? *

Yes

No

During your nursing school education, did you discuss in any of your classes the reasons why people use tobacco? *

Yes

No

During your nursing school education, were you taught to include tobacco use in assessing the patient's general medical history? *

Yes

No

During your nursing school education, have you ever received any formal training in smoking cessation approaches to use with patients? *

Yes

No

During your nursing school education, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit? *

Yes

No

Have you ever heard of using nicotine replacement

therapies in tobacco cessation programs (such as nicotine patch or gum)?

Yes

No

Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)?

Yes

No

Have you ever heard of using non-pharmacological strategies in smoking cessation programs? **

Yes

No

If yes, what strategies? *

Comments

Do you have any additional comments related to the survey questions, or your personal attitudes about tobacco usage (such as why you smoke), cessation, or your school's curriculum? (Optional) *

*Questions had their wording edited from the original survey to better match the population being surveyed.

**Questions were added to better evaluate the population being surveyed.

APPENDIX B

SURVEY EMAIL

Dear [school] nursing student,

Please consider completing this short (5 minute) tobacco use survey, conducted by a Pitt nursing student through the Undergraduate Research Mentorship Program. The purpose of this research study is to determine the attitudes and prevalence of tobacco use among nursing students. For that reason, we will be surveying nursing students from a number of colleges in the greater Pittsburgh area and will ask questions about background (e.g. age, gender, years of education) as well as your feelings about tobacco use, and your current usage. There are no foreseeable risks associated with this project, nor are there any direct benefits to you. This is an entirely anonymous questionnaire, and so none of your responses will be identifiable in any way. All responses are confidential, and will be kept on a secure computer server. Your participation is completely voluntary. Contact me at [email] if you have any questions.

You must be 18 years of age or older to participate. To complete the survey, please follow this link: [web address].

Thank you for your consideration!

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