The Relationship between Knowledge about Smoking-related Health Risks, Attitudes, Smoking Status, and Level of Education in Baccalaureate Nursing Students

Bridget Borojevich

The University of Akron

4 April 2012

Christine Heifner Graor, PhD, MSN, RN
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Abstract

Smoking is a leading cause of death worldwide. Nursing students are part of this statistic despite being knowledgeable about smoking risk, assessment, and cessation. The purpose of this study was to examine the smoking status of baccalaureate nursing students and the relationship between levels of education, attitudes about smoking, smoking status, and knowledge about smoking risks. The study was guided by the Health Belief Model which proposes that health behaviors are determined by perceptions of susceptibility of a health threat and the perceived benefits and barriers to taking action against the threat. Convenience sampling of nursing students in sophomore, junior, and senior level classes, and cross-sectional surveys were used. Knowledge, attitudes, and smoking status were measured with the Global Health Professional Student Survey. Approximately 18% of students reported to smoke, and of those who smoked, 75% reported wanting to quit. As level of education increased, knowledge about the smoking risks, assessment, and cessation increased. Attitudes supporting the banning of smoking also increased. However, as level of education increased, students did not report decreased smoking behaviors. Therefore, education was related to knowledge and attitudes, but not to behaviors. Baccalaureate nursing students may benefit from on-site smoking cessation programs.
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Smoking is one of the leading causes of death worldwide, taking 4.9 million lives per year (Svavarsdottir & Hallgrimsdottir, 2007). Within the United States, there are approximately 438,000 smoking-related deaths per year. Approximately $75.5 billion is spent annually on smoking-related illness including chronic obstructive pulmonary disease, exacerbations of asthma, and various types of cancer (Morrell, Cohen, & Dempsey, 2008). It may be surprising to find that nurses and baccalaureate nursing students are included in these statistics despite their knowledge of the adverse effects of smoking. Both are also often on the front lines interacting with patients (or people), assessing smoking habits and providing information on cessation.

Nurses’ behaviors, views and attitudes about smoking may play important roles in anti-smoking counseling that is provided. For example, if the patient realizes that the nurse smokes, the patient may be less likely to take the nurse’s advice to stop smoking (Al-Haqwi, Tamim, & Asery, 2010). This is a relevant issue because nursing students in the Midwest may frequently be spotted smoking during class breaks or lighting up once class is over. Sometimes, these students have even been seen smoking in school uniform after clinical experience. These students will become the nurses who will eventually encourage patients to make positive behavioral health changes.

The purpose of this study is to examine the smoking status of baccalaureate nursing students and the relationship between level of education, attitudes about smoking, smoking status, and knowledge about smoking risks. The study aims to address the following research question: What is the smoking status of nursing students? What is the relationship between level of education, smoking status, attitudes about smoking, and knowledge about health-related smoking risks, assessment, and cessation? Smokers are defined as those who smoke even if only
on occasion, and nonsmokers are those who have either never smoked or who have quit smoking.

**Review of Literature**

**Knowledge about Smoking-related Health Risks and Smoking in the General Population**

When researchers examined the relationship between knowledge about smoking-related health risks and smoking, many found no relationship (Heikkinen, Patja, & Jallinoja, 2010). For example, Heikkinen and colleagues (2010) found that even though people who smoke were aware of the risks of their behavior, they continued to smoke and assigned values to the action which would reduce the threat. Specifically, they assigned values based on personal experience and experience with those in their lives who smoked without negative consequence.

There are other factors influencing the decision to smoke or not including perceived smoking norms, smoking among influential others, exposure to pro-tobacco media, and attitudes toward smoking (Chen et al., 2006). Perceived smoking norms and smoking among influential others are the two primary influencing factors. Perceived smoking norms serve as a reference for decision-making about smoking and are especially influential amongst adolescents. Perceived smoking norms may also be a reference to consider when forming social relationships (Yao, Ong, Lee, Jiang, & Mao, 2009).

**Knowledge about Smoking-related Health Risks and Smoking in College Students**

When researchers have investigated smoking in college students, they have surprisingly found that undergraduate students who are not majoring in health care professions were less likely to ever have tried smoking compared to students of health care professions (Morrell et al., 2008). The researchers found that those not majoring in health care professions, however, were more likely to be currently smoking and reported more attempts to quit smoking compared to
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those majoring in health care professions. They found no significant difference between the knowledge of health risks associated with smoking amongst typical undergraduate students and those majoring in health care professions (Morrell et al., 2008).

Due to the knowledge of negative health effects of smoking, many policies have been implemented to promote public health. There are laws in which individuals are not to smoke within 30 feet of the entrance to a building, and schools often choose to implement their own policies. These policies include the provision of smoke-free environments with smoke-free adult role models. Studies have examined the effectiveness of these school policies including students' knowledge on the health effects of smoking (Darling, Reeder, Williams, & McGee, 2005). While Darling and colleagues (2005) found that policies that focused on smoking prevention through education of negative health effects and cessation support were associated with lower levels of smoking, they found no relationship between the knowledge of smoking-related health risks and smoking status. Although the authors measured knowledge, they did not measure attitudes toward policies promoting a smoke-free environment.

Knowledge about Smoking-related Health Risks and Smoking in Nursing Students

As previously discussed, studies have indicated that students majoring in health care professions, such as nursing, have similar knowledge of the health-related risks of smoking as compared to students not majoring in health care professions (Morrell et al., 2008). However, few studies have focused on the knowledge of the health-related risks of smoking and smoking status in nursing students alone. No studies were found about the relationship between attitudes, knowledge, and smoking status in this population. Nursing students are frequently provided with information on the health effects of smoking, but the research indicates nursing students perceive that the curricula often lacked information on tobacco treatment techniques (Lenz, 2008). Often
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nursing students only gained experience regarding smoking cessation advice if they received an opportunity to teach clients in clinical settings.

Theoretical Framework

The study is guided by the health belief model (See Appendix B). This model describes health-related behavior. Health-related behavior may include compliance with medical advice, such as advice to cease smoking. Health-related behavior is often influenced by a person’s perception of a threat posed by a health problem as well as the value of actions that will reduce the threat (Polit & Beck, 2010). For example, a person with personal experience and experience with those in their lives who smoked without negative consequence may perceive that there is a low threat to health posed by smoking, and may assign a low value to any action that may reduce the threat.

Knowledge of the health risks of smoking is knowledge of illnesses or diseases that are either caused or exacerbated by smoking, the body’s physiologic responses to smoking, and effects of passive smoking. Based on the model, knowledge of smoking risks may affect perceived seriousness of consequences of the problem as well as perceived susceptibility of problem, both of which affect perceived threat. Smoking status of participants is either smoker or nonsmoker. As previously mentioned, smokers are defined as those who smoke even if only on occasion and nonsmokers are those who have either never smoked or who have quit smoking. Based on the framework, it is anticipated that the smoking status amongst baccalaureate nursing students is inversely related with knowledge about smoking-related health risks. Perception of threat, however, may explain if no relationship is found between knowledge and smoking status.
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Methods

A correlational design guided this study. After the study was approved by the university institutional review board, data about knowledge, attitudes, level of education, and smoking status were collected from second, third, and fourth year students in the baccalaureate nursing program. Recruitment and data collection began after gaining entry into five courses via contact with course instructors. Once informed consent was received, participants were asked to complete a survey consisting of 48 questions and to return both complete and incomplete surveys face-down directly to the primary investigator.

Setting and Sample

The setting of this study was a Midwestern state university college of nursing during the fall of 2011. The university enrolls approximately 28,000 students representing 46 U.S. states and 80 foreign countries. The college of nursing at this university enrolls about 500 students with approximately 164 students in each class. Students at this university are accepted into the college of nursing during their second year. Inclusion criteria for study participants were as follows: at least 18 years old, actively enrolled in the college of nursing traditional, nontraditional, accelerated or RN/BSN programs, and taking courses at least part time. Students were not excluded based on gender, ethnicity, or age as long as they were at least 18 years old.

Sampling and Data Collection Procedures

The primary investigator gained the permission of course instructors in the college of nursing to recruit during class time. Upon gaining access to the students via course instructors, the primary investigator then provided the students in the course a brief explanation of the study and asked them to participate, explaining that participation was voluntary and there were no consequences for not participating. The students also received a more detailed explanation of the
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study in an informed consent attached to the printed survey and were notified that a completed
and submitted survey conveyed informed consent.

The primary investigator collected data using a printed survey (See Appendix C). The survey was distributed to all students. Those who chose to participate then filled out the survey and placed it face down in a designated container in the front of the room. Those who chose not to participate returned their blank surveys face down in the same location. No identifying information was collected; therefore, the primary investigator was not able to link any specific surveys to participants.

Measures

Attitudes about smoking, smoking status, and knowledge of smoking-related health risks and smoking status were measured with a subset of key questions from the Global Health Professional Student Survey (See Appendix C). This survey was found at the Center for Disease Control’s Global Tobacco Control website. The survey was developed by the World Health Organization, the Center for Disease Control, and the Canadian Public Health Association. The survey was intended to be used for third-year students who are pursuing a degree in nursing, or also in pharmacy, dentistry, and medicine. It was intended to be anonymous, confidential, self-administered, and conducted during regular class sessions. The survey included a core questionnaire and inserting additional questions was permissible (Centers for Disease Control and Prevention, 2012).

Five items measured attitudes about smoking. Examples of attitude items include: Should tobacco sales to adolescents (persons younger than 18 years old) be banned? Should there be a complete ban of the advertising of tobacco products? Participants were asked to rate responses to items on a dichotomous scale by choosing either “yes” (coded as 1) or “no” (coded as 0).
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Responses were summed to measure total attitude against smoking and ranged from 0 to 5 with higher scores indicating higher anti-smoking attitudes.

Two items measured education about smoking-related health risks, one item measured education about assessment, and four measured education about cessation. Participants were asked to rate responses to items on a dichotomous scale by choosing either “yes” (coded as 1) or “no” (coded as 0). Responses were summed to measure total knowledge about (a) health risks, (b) assessment, and (c) cessation, with higher scores indicating more knowledge.

Smoking status was measured with three items to determine prevalence. Participants were asked to rate responses on a dichotomous scale by choosing either “yes” (coded as 1) or no (coded as 0). Responses ranged from 0 to 7 with higher scores indicating increasing smoking prevalence. Level of education was measured with one item with responses ranging from 1 to 4 with higher numbers indicating higher levels of education.

Data were also collected on the following demographics: gender, age, ethnicity, year level; and whether the student is traditional, nontraditional, accelerated, or RN/BSN.

Data Analysis Plan

Data were entered into the Statistics Program for Social Scientists (SPSS) for quantitative data analysis. Descriptive statistics were used to describe the sample, knowledge, attitudes, level of education, and smoking status. Pearson correlation coefficients were used to determine the relationship between attitudes, knowledge, smoking status, and level. Significance values were set at p-values less than 0.05.
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Results

Sample

The sample consisted of 289 participants. Approximately 74% of the sample was female and 89% was Caucasian. The majority was never married (75%), lived off campus with others (78%), and enrolled in the four year BSN program (85%). Ten percent was enrolled in the RN/BSN program, 1% was in the accelerated program, and 3.5% of the sample listed themselves as “other.” Forty-five percent were first year sophomore students, 29% were second year juniors, and 25% were third year seniors. Age ranged from 19 to 51 with an average of 23 years old (SD=5.362). Grade point averages ranged from 2.70 to 4.00 (mean=3.57, SD=.265). Participants worked from zero up to 56 hours a week averaging 15.02 hours weekly (SD=11.424). Detailed demographic data are listed in Appendix D.

Research Question

Descriptive statistics were used to answer the first research question: What is the smoking status of nursing students? Approximately 55% of participants reported ever experimenting with cigarette smoking, and 17.6% reported smoking cigarettes during the past 30 days. Approximately 70% reported being around people who smoked during the past seven days. Of those who currently smoke, 75% reported wanting to quit. Approximately 25% reported ever using chewing tobacco, snuff, bidis, cigars, or pipes, and 10% reported using these during the past 30 days.

Pearson correlation coefficients were used to answer the second research question: What is the relationship between knowledge about health-related smoking risks, attitudes about smoking, smoking status and level of education? As level in nursing education increased, so did attitudes toward banning smoking (r=.18, p=.003) and knowledge about health-related smoking
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risks (r=.14, p=.02) assessment (r=.15, p=.014), and cessation (r=.17, p=.007). However, there was no significant relationship between smoking prevalence and knowledge, attitudes, and level of education. The findings suggest that although participants’ attitudes for smoking bans and knowledge about smoking cessation, assessment, and health-related smoking risks increased as the level of schooling increased, smoking behaviors were not decreased. However, as stated previously, 75% of participants who smoke reported wanting to quit. More than 90% of students agreed that the dangers of smoking were taught in the baccalaureate nursing program. However, 61.9% of students said that they had not received formal training in smoking cessation approaches to use with patients (See Appendix E).

Discussion

Approximately 55% of the nursing students reported ever experimenting with cigarette smoking, and 17.6% reported smoking cigarettes during the past 30 days. Of those who currently smoke, 75% reported wanting to quit. Many researchers have described smoking prevalence in health care workers and students, both outside and within the United States (U.S.). Yao and colleagues (2009) studied knowledge, attitude, behavior, and associated factors of smoking in Chinese male surgeons and found that approximately 23% of all Chinese male surgeons currently smoked and that 48.1% of Chinese surgeons currently smoked (Yao et al., 2009). Darling and colleagues (2006) found between 0 to 35.4% prevalence rate of daily smoking in several secondary schools in New Zealand. Al-Haqwi et al. (2010) found a 19% prevalence of smoking amongst Saudi Arabian medical students with variations according to gender. Morrell and colleagues (2008) studied smoking prevalence and awareness among health care students in the U.S. and found a prevalence of 16.8% within this population. Lenz (2008) studied U.S. nursing students’ beliefs, attitudes, and self-efficacy about tobacco cessation and found a 7.9%
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prevalence of smoking. However, approximately 18% reported use in the past 30 days and 40% reported use on 10 or more days in the past 30 days, suggesting a higher prevalence rate than the 7.9% reported (Lens, 2008). In conclusion, although results from the present study indicated a 17.6% prevalence of smoking in the past 30 days, the actually prevalence of smoking within the last 30 days may be higher than was reported.

Findings showed that as progression through the nursing educational program advanced, knowledge about health-related smoking risks, smoking assessment, and smoking cessation increased. As progression of nursing education increased, attitudes supporting smoking bans also increased. However, in spite of these findings, as nursing education increased, the nursing students’ smoking behavior did not decrease. These findings that smoking behaviors did not decrease in spite of increases in attitudes for smoking bans and knowledge about smoking cessation, assessment, and health-related smoking risks are supported by findings of other studies. For example, Al-Haqwi and colleagues (2010) studied medical students and found that smoking status was highest amongst senior medical students compared with students in their first two years of medical school. They found that regardless of how well informed the students were about the hazards of smoking, they continued to smoke (Al-Haqwi et al, 2010). Morrell and colleagues (2008) speculated that knowledge in and of itself may not be enough to dissuade health care students as well as other students to cease smoking and tobacco. It may be speculated that there are other factors which motivate students to continue to smoke regardless of the provision of knowledge. Those factors may include increasing stress with progression through the nursing program due to course load. Stress due to multiple roles and role conflict of nursing students may also be an issue as many nursing students may also be under obligation to maintain a job, care for children, and to be a productive member of a family unit. Perceived smoking
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norms, peer pressure, exposure to tobacco media, and attitudes regarding smoking have previously been cited as influential factors as well (Chen et al., 2006). Lenz (2008) found that knowledge and attitudes regarding smoking in nursing students provided a barrier. More nonsmokers thought that nurses should set a good example by not smoking themselves (89%) versus those who did smoke and disagreed that nurses should be a positive role model (Lenz, 2008). Further, Lenz (2008) found that nursing students did not believe that brief tobacco treatment counseling had an effect of improving smoking cessation. Lastly, and perhaps most alarming, Lenz (2008) found that nursing students who smoked do not feel as though it is their professional responsibility to help smokers quit. Lenz (2008) found that nursing students who classified as smokers or occasional smokers tended to deny negative aspects of tobacco use in light of the positive aspects which may be associated with the psychoactive benefits or pleasures.

Of the current study, 80.6% of students reported that there is an official policy banning smoking in both school buildings and clinics, and 70.2% agreed that the policy is enforced. Although researchers have found no relationship between school policies banning smoking and student smoking status (Darling et al., 2006), it is possible that school and clinic smoking bans may influence students’ attitudes supporting the banning of smoking. This, along with knowledge, may explain the positive relationship between level of education and attitudes banning smoking. That is, as level increases, students’ exposure to school and clinic banning of smoking also increases. Increasing smoking bans in public places implemented by governmental institutions may also have an influence on attitudes supporting banning of smoking.

Furthermore, more than 90% of students agreed that the dangers of smoking were taught in the baccalaureate nursing program. However, 61.9% of students said that they had not received formal training in smoking cessation approaches to use with patients. It is possible that
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even though knowledge about smoking-related risk, assessment, and cessation increased, application of cessation was not taught or experienced, which is information that may have contributed to students’ efforts to quit smoking. Lenz (2008) found in her study of nursing students that regardless of students’ smoking behaviors, they felt that there was a lack of application of skills learned regarding the dangers of smoking and smoking cessation approaches with patients. Svavarsdottir and Hallgrimsdottir (2007) found that only 25.7% of nurses felt that their nursing education had prepared them to adequately assist clients in smoking cessation. Barriers to provision of smoking cessation counseling included having no time to do so during shift, insufficient knowledge inadequate training, feeling as though it is not part of the job, and considering it a difficult task to perform (Svavarsdottir & Hallgrimsdottir, 2007).

The Health Belief Model (HBM) was used as the framework for this study as it describes health related behavior of individuals. Health related behavior may be influenced by the perception of susceptibility of a threat to one’s health and the perceived benefits and barriers to taking action against the threat (Lenz, 2008). Perceived benefits and barriers to taking action against the health hazards of smoking may be affected by knowledge but also involve one’s attitudes and beliefs regarding smoking, regardless of knowledge about smoking-related risks, assessment, and cessation. Based on the HBM, it was anticipated that the smoking status amongst baccalaureate nursing students would be inversely related with knowledge about smoking-related health risks, and that perception of threat may explain if no relationship is found between knowledge and smoking status. No relationship was found between knowledge, attitude and smoking status, suggesting that perception of threat and benefits to taking action was somehow buffered by experience that assigned less risk. The findings are consistent with previous studies that showed that knowledge does not always translate into perceived
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susceptibility and knowledge by itself is often not enough to motivate a person to take action against a threat. Considering that 81.3% of the nursing students are nonsmokers, it is possible that the students have a positive sentiment toward perceived benefits of not smoking. Further, 78.2% of students reported that a patient’s chances of successfully ceasing to smoke increased if a health professional advises him or her to do so. The majority of students (81.7%) also believed that smoking should be banned in all enclosed public places. Approximately 93% of participants believed that nurses should serve as role models for their patients and the public (i.e., by refraining from smoking), and 68.9% of participants felt that nurses who smoked themselves were less likely to provide cessation counseling.

Conclusions

In summary, the findings show that 17.6% of nursing students smoked, and of those, 75% reported the desire to stop. This leaves 81.3% of students reporting that they do not smoke. Approximately 55% of participants reported ever experimenting with cigarette smoking, and 17.6% reported smoking cigarettes during the past 30 days. Approximately 25% reported ever using chewing tobacco, snuff, bidis, cigars, or pipes, and 10% reported using these during the past 30 days. Although there was no significant relationship between smoking prevalence and knowledge, attitudes, and level of education, findings show that students’ attitudes for smoking bans and knowledge about smoking cessation, assessment, and health-related smoking risks increased as the level of schooling increased.

Limitations

One limitation was the larger percentage of first year sophomore students (44.6%) compared with second year junior (29.1%) and third year senior (25.3%) students. This created an uneven distribution of participants which could have affected results. This uneven level
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distribution was related, in part, to recruitment efforts of gaining entry from course instructors to
come to class and recruit participants. Access and time restrictions were varied and imposed by
instructors related to sophomore 15-week semester classes and junior and senior 8 week rotations
(2) within semesters. That is, given that many junior and senior level courses are only seven and
a half weeks long, many course instructors were reluctant to give up lecture time for recruitment
due to the amount of material needing to be covered.

The use of convenience sampling also limits the generalization of findings. One final
limitation included the fact that 84.8% of those who participated were students enrolled in the
four year baccalaureate nursing program. Therefore, findings cannot be generalized to students
the RN to BSN program, or in the accelerated nursing program.

Implications and Recommendations for Future Studies

The findings of this research study, as well as previous studies, may suggest that
baccalaureate nursing students may benefit from on-site smoking cessation programs to aid the
75% of smokers who wish to lessen the habit. Therefore, future studies may examine the effect
of an on-site smoking cessation program on the smoking status of nursing students. More may
also be done to examine the attitudes of nursing students; particularly regarding attitudes toward
smoking bans, as well as addressing health choices of nursing students themselves.

The HBM proposes that individuals are more likely to change health behaviors and
comply with regimens if they believe they are susceptible to a health threat and that the benefits
of change outweigh the costs. In spite of increased knowledge and attitudes that supported
smoking bans, smoking status was not decreased. Therefore, one could deduce that students did
not perceive themselves susceptible to the health threats of smoking. Students may also not have
decreased smoking because they did not feel that the benefits of changing outweighed the costs.
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That is, students may have felt that smoking was a stress management tool they felt they needed and were not willing to give up, suggesting smoking was used as a poor coping skill to decrease anxiety. Some students may have even felt that quitting was too much to take on in addition to everything else. That leads to the next suggestion for future research that researchers investigate factors associated with smoking as students progress through health education programs.

Smoking cessation programs for students that address needs for stress management skills may also be beneficial.
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References


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### Appendix A
Review of the Literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Year</th>
<th>Theoretical Framework</th>
<th>Problem Question</th>
<th>Sample Design</th>
<th>Variables</th>
<th>Reliability/Validity Statistics</th>
<th>Findings/Conclusion</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Chen, X., Stanton, B., Fang, X., Li, X., Lin, D., Xhang, J., Liu, H., and Yang, H.</td>
<td>Perceived smoking norms, socioenvironmental factors, personal attitudes and adolescent smoking in China: a mediation analysis with longitudinal data.</td>
<td>2005</td>
<td>The Planned Behavior-Reasoned Action Theory</td>
<td>What is the relationship among risk factors in predicting adolescent smoking?</td>
<td>Longitudinal</td>
<td>Independent: Smoking among influential others, exposure to pro-tobacco media, and attitudes of respondents toward smoking. Dependent: Amount of cigarettes smoked. Mediation: Perceived smoking norms.</td>
<td>SD= 1.7  P&lt;0.01  P&lt; 0.05</td>
<td>Smiling among influential others and attitudes toward smoking influence adolescent smoking both indirectly and directly.</td>
<td>Subjects not randomly selected and represent only a small percentage of Chinese adolescents, therefore results cannot be generalized.</td>
</tr>
<tr>
<td>Darling, H., Reeder, H.I., Williams, S., &amp; McGee, R.</td>
<td>Is there a relationship between school smoking policies and youth cigarette smoking knowledge and behaviors?</td>
<td>2006</td>
<td>Not indicated</td>
<td>(See title)</td>
<td>Multi-stage cluster sampling procedure.</td>
<td>Independent: School policies Dependent: cigarette smoking.</td>
<td>Z= 2.24  P = 0.03, 0.049. 0.044 CI= 0.78-1.00, 0.81-1.00</td>
<td>Having a school tobacco policy is unrelated to the prevalence of smoking among students, tobacco purchasing behavior and the knowledge of the negative health effects of tobacco.</td>
<td>No data was available about policy implementation.</td>
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<tr>
<td>Influence of Social influence</td>
<td>Influence of Social influence</td>
<td>(See title)</td>
<td>Survey-</td>
<td>Dependent:</td>
<td>p&gt; 0.05, not</td>
<td>Adolescents from</td>
<td>Causal influences</td>
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<td><strong>Beliefs, Knowledge, and Self-Efficacy of Nursing Students Regarding Tobacco Cessation.</strong> Lenz, B.K. 2008.</td>
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<td><strong>Participation of Icelandic nurses in smoking</strong></td>
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</table>

<p>| <strong>model</strong> | <strong>questionnaire, cross-sectional.</strong> | <strong>Experimentation with cigarettes (ever smoking), 30-day smoking and susceptibility to smoking. Independent: Influence of known psychosocial risk factors associated with Western adolescents on Egyptian adolescents’ smoking behaviors.</strong> | <strong>significant</strong> | <strong>collective cultures, like Egypt, are more influenced by their family’s smoking behavior and perceived adult smoking norms than their peer’s smoking behavior and perceived peer smoking norms.</strong> | <strong>cannot be determined, lack of follow-up information of the absentees and their parents</strong> |
| <strong>Health belief model.</strong> | <strong>Survey questionnaire, quantitative descriptive.</strong> | <strong>Independent: Beliefs about smoking, knowledge about tobacco</strong> | <strong>Dependent: Self-efficacy and behavior application of tobacco</strong> | <strong>P 0.019-0.807 (&gt;0.05, not significant)</strong> | <strong>Nursing students’ personal smoking behaviors affected their beliefs about smoking and their view about the professional role in helping smokers quit.</strong> | <strong>Potential for respondent bias, measurement validity, and use of only one psychometric measurement tool which does not allow for validation of responses. Variability in teaching methods, content emphasis, faculty expertise and clinical experience. Potential sampling error.</strong> |
| <strong>Not indicated</strong> | <strong>Anonymous mail survey.</strong> | <strong>Independent: Participation in smoking</strong> | <strong>P &lt; 0.001</strong> | <strong>P &lt; 0.05</strong> | <strong>Nurses frequently neglect to counsel clients</strong> | <strong>Relatively low response rates and reliance on</strong> |</p>
<table>
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<tr>
<th>Study Title</th>
<th>Research Question</th>
<th>Methodology</th>
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<tr>
<td>Icelandic nurses in smoking cessation counseling, and what are barriers to smoking interventions by nurses?</td>
<td>What is the level of smoking knowledge, attitudes, behavior, and associated factors among Chinese male surgeons?</td>
<td>Self-reported data.</td>
<td>Common barriers to the delivery of smoking cessation interventions by nurses include insufficient education and training in smoking cessation therapy. Male surgeons have the highest smoking prevalence among Chinese physicians. They should actively participate in tobacco control training and education to improve their knowledge and attitudes toward smoking, which will improve their own smoking behavior and smoking cessation practices. Only by engaging all parts of the</td>
<td>self reported data.</td>
</tr>
<tr>
<td>Smoking Knowledge, Attitudes, Behavior, and Associated Factors Among Chinese Male Surgeons. Yao, T., Ong, M., Lee, A., Jiang, Y., and Mao, Z. 2009.</td>
<td>Not indicated.</td>
<td>Descriptive. Face-to-face interview with self-administered questionnaire.</td>
<td>P &lt; 0.05</td>
<td>Reliance on self-reported smoking behavior, social desirability resulting in bias, and the study did not examine male surgeons in rural areas.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Smoking Prevalence and Awareness Among Undergraduate and Health Care Students. Morrell, H.E.R., Cohen, L.M., &amp; Dempsey, J.P. 2008.</th>
<th>Not indicated</th>
<th>Hypothesis: Health care students would show lower rates of smoking in comparison to undergraduate college students.</th>
<th>Web-based survey</th>
<th>Independent: Ever tried smoking, current smoking, quit attempts, health awareness. Dependent: Smoking prevalence.</th>
<th>P &lt; 0.05</th>
<th>Those majoring in health care professions were more likely to have tried smoking, however those not majoring in health care professions were more likely to be currently smoking and reported more attempts to quit smoking.</th>
<th>Low survey response rate.</th>
</tr>
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<tbody>
<tr>
<td>Knowledge, attitude and practice of tobacco smoking by medical students in Riyadh, Saudi Arabia. Al-Haqwi, A.I., Tamim, H., and Asery, A. 2010.</td>
<td>Problem based learning</td>
<td>What are the knowledge, attitude and practice of tobacco smoking by medical students in Riyadh, Saudi Arabia?</td>
<td>Cross-sectional</td>
<td>Independent: Students’ smoking practices, knowledge, and attitude toward smoking. Dependent: Smoking.</td>
<td>P &lt; 0.001</td>
<td>Despite good knowledge about the hazards of tobacco consumption, about 25% of the medical students in this study continue to smoke.</td>
<td>Not discussed</td>
</tr>
<tr>
<td>Smoking in young people with asthma. Hublet, A., De Bacquer, D., Boyce, W.,</td>
<td>Not indicated</td>
<td>Are asthmatic adolescents more likely to smoke and what is their smoking profile?</td>
<td>Cluster sampling, self-administered questionnaire.</td>
<td>Independent: Liking school, academic achievement, drunkenness, cannabis use in</td>
<td>P &lt; 0.05</td>
<td>Adolescents with diagnosed asthma are more likely to be daily smokers than non-asthmatic</td>
<td>Inability to demonstrate causal relations, the questionnaire is self-reported, relatively small</td>
</tr>
<tr>
<td>Godeau, E., Schmid, H., Vereecken, C., De Baets, F., &amp; Maes, L. 2007.</td>
<td>last year, communication with parents, evenings spend with friends, life satisfaction, parental smoking, and smoking friends. Dependent: Clients with asthma smoking.</td>
<td>adolescents. Smoking in adolescents with asthma is a public health problem. Smoking prevention efforts directed towards young people should pay attention to young people with asthma.</td>
<td>number of questions on the topic.</td>
<td></td>
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</tbody>
</table>

| Smokers’ accounts on the health risks of smoking: Why is smoking not dangerous for me? Heikkinen, H., Patja, K., & Jallinoja, P. 2010. | Not indicated | What are the accounts that smokers give in response to the argument that smoking is a risk to their health? | Review of literature using data from an interview based study. |

| Independent: Health risk perspective, belief that moderate use is not harmful, counter-evidence, compensatory behavior, smoking as the lesser evil. Dependent: Low value assigned to health risks of smoking and value assigned to actions that will reduce the threat. | N/A | The smokers presented themselves as risk-aware actors and accepted individual responsibility for their smoking and its possible health effects. The study participants simultaneously challenged the health risk argument by suggesting that their own smoking is not necessarily injurious, or that it only constitutes either a minimal or acceptable risk to them. |

| Many economically inactive population groups were left out. The interview setting offers an opportunity for retrospective rationalizations of actions perceived as socially unacceptable. |
Health Belief Model:

- Perceived susceptibility to problem
- Perceived seriousness of consequences of problem
- Perceived benefits of specific action
- Perceived barriers to taking action

Flow to:
- Perceived threat
- Self efficacy (Perceived ability to carry out recommended action)
- Outcome expectations
KNOWLEDGE AND SMOKING STATUS

Appendix C

CORE QUESTIONS GLOBAL HEALTH PROFESSIONAL STUDENTS SURVEY (GHPSS) 2008
(Revised January 2007)

Content
I. Tobacco Use Prevalence Among Health Professional Students
II. Exposure to Environmental Tobacco Smoke
III. Attitudes
IV. Behavior /Cessation
V. Curriculum/Training
VI. Demographics
KNOWLEDGE AND SMOKING STATUS

INSTRUCTIONS
• Please read each question carefully before answering it.
• Choose the answer that best describes what you believe and feel to be correct.
• Choose only one answer for each question.
• On the answer sheet, locate the circle that corresponds to your answer and fill it in completely with the pencil that was provided to you.
• Correctly fill in the bubbles:
Like this:
• If you have to change your answer, don’t worry, just erase it completely, without leaving marks.
• Remember, each question only has one answer.

Example: Questionnaire
24. Do you believe that fish live in water?
• Definitely yes
• Probably yes
• Probably not
• Definitely not

24. B C D E F G H

2
KNOWLEDGE AND SMOKING STATUS

1. Tobacco Use Prevalence among Health Professional Students

1. Have you ever tried or experimented with cigarette smoking, even one or two puffs?
   • Yes
   • No

2. How old were you when you first tried a cigarette?
   • I have never smoked cigarettes
   • Age 10 or younger
   • Age 11-15
   • Age 16-17
   • Age 18-19
   • Age 20-24
   • Age 25-29
   • Age 30 or older

3. During the past 30 days (one month), on how many days did you smoke cigarettes?
   • 0 days
   • 1 or 2 days
   • 3 to 5 days
   • 6 to 9 days
   • 10 to 19 days
   • 20 to 29 days
   • All 30 days

4. Have you smoked cigarettes on school premises/property during the past year?
   • I have never smoked cigarettes
   • Yes
   • No

5. Have you smoked cigarettes in school buildings during the past year?
   • I have never smoked cigarettes
   • Yes
   • No

6. Have you ever used chewing tobacco, snuff, bidis, cigars, or pipes? (Adjust to fit your country.)
   • Yes
   • No
KNOWLEDGE AND SMOKING STATUS

7. During the past 30 days (one month), on how many days did you use chewing tobacco, snuff, bidis, cigars, or pipes? (Adjust to fit your country.)
   • 0 days
   • 1 or 2 days
   • 3 to 5 days
   • 6 to 9 days
   • 10 to 19 days
   • 20 to 29 days
   • All 30 days

8. Have you used chewing tobacco, snuff, bidis, cigars, or pipes on school premises/property during the past year? (Adjust to fit your country.)
   • I have never used chewing tobacco, snuff, bidis, cigars, or pipes
   • Yes
   • No

9. Have you used chewing tobacco, snuff, bidis, cigars, or pipes in school buildings during the past year? (Adjust to fit your country.)
   • I have never used chewing tobacco, snuff, bidis, cigars, or pipes
   • Yes
   • No

II. Exposure to environmental tobacco smoke

10. During the past 7 days, on how many days have people smoked where you live, in your presence?
    • 0 days
    • 1 to 2 days
    • 3 to 4 days
    • 5 to 6 days
    • All 7 days

11. 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 to 2 days
    • 3 to 4 days
    • 5 to 6 days
    • All 7 days
KNOWLEDGE AND SMOKING STATUS

12. Does your school have an official policy banning smoking in school buildings and clinics?
   • Yes, for school buildings only
   • Yes, for clinics only
   • Yes, for both school buildings and clinics
   • No official policy

13. Is your school’s official smoking ban for school buildings and clinics enforced?
   • Yes, policy is enforced
   • No, policy is not enforced
   • School has no official policy

III. Attitudes

14. Should tobacco sales to adolescents (persons younger than 18 years old) be banned?
   • Yes
   • No

15. Should there be a complete ban of the advertising of tobacco products?
   • Yes
   • No

16. Should smoking be banned in restaurants?
   • Yes
   • No

17. Should smoking be banned in discos/bars/pubs?
   • Yes
   • No

18. Should smoking in all enclosed public places be banned?
   • Yes
   • No

19. Should health professionals get specific training on cessation techniques?
   • Yes
   • No

20. Do health professionals serve as “role models” for their patients and the public?
   • Yes
   • No
KNOWLEDGE AND SMOKING STATUS

21. Should health professionals routinely advise their patients who smoke to quit smoking?
   • Yes
   • No

22. Should health professionals routinely advise their patients who use other tobacco products to quit using these products?
   • Yes
   • No

23. Do health professionals have a role in giving advice or information about smoking cessation to patients?
   • Yes
   • No

24. Are a patient’s chances of quitting smoking increased if a health professional advises him or her to quit?
   • Yes
   • No

IV. Behavior/Cessation

25. How soon after you awake do you smoke your first cigarette?
   • I have never smoked cigarettes
   • I do not currently smoke cigarettes
   • Less than 10 minutes
   • 10-30 minutes
   • 31-60 minutes
   • After 60 minutes

26. Do you want to stop smoking cigarettes now?
   • I have never smoked cigarettes
   • I do not smoke now
   • Yes
   • No

27. During the past year, have you ever tried to stop smoking cigarettes?
   • I have never smoked cigarettes
   • I did not smoke during the past year
   • Yes
   • No
KNOWLEDGE AND SMOKING STATUS

28. How long ago did you stop smoking cigarettes?
   • I have never smoked cigarettes
   • I have not stopped smoking cigarettes
   • Less than 1 month
   • 1-5 months
   • 6 – 11 months
   • One year
   • 2 years
   • 3 years or longer

29. Have you ever received help or advice to help you stop smoking cigarettes?
   • I have never smoked cigarettes
   • Yes
   • No

30. Do you want to stop using chewing tobacco, snuff, bidis, cigars or pipes now? (Adjust to fit your country.)
   • I have never used chewing tobacco, snuff, bidis, cigars or pipes
   • I do not use chewing tobacco, snuff, bidis, cigars or pipes now
   • Yes
   • No

31. Are health professionals who smoke less likely to advise patients to stop smoking?
   • Yes
   • No

32. Are health professionals who use other tobacco products (chewing tobacco, snuff, bidis, cigars or pipes) less likely to advise patients to stop smoking? (Adjust to fit your country.)
   • Yes
   • No

V. Curriculum/Training

33. During your (medical, dental, nursing, or pharmacy) school training, were you taught in any of your classes about the dangers of smoking?
   • Yes
   • No

34. During your (medical, dental, nursing, or pharmacy) school training, did you discuss in any of your classes the reasons why people smoke?
   • Yes
   • No
KNOWLEDGE AND SMOKING STATUS

35. During your (medical, dental, nursing, or pharmacy) school training, did you learn that it is important to record tobacco use history as part of a patient’s general medical history?
   • Yes
   • No

36. During your (medical, dental, nursing, or pharmacy) school training, have you ever received any formal training in smoking cessation approaches to use with patients?
   • Yes
   • No

37. During your (medical, dental, nursing, or pharmacy) school training, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit smoking?
   • Yes
   • No

38. Have you ever heard of using nicotine replacement therapies in tobacco cessation programs (such as nicotine patch or gum)?
   • Yes
   • No

39. Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)?
   • Yes
   • No
VI. Demographics
40. How old are you?
• 14 years or younger
• 15 to 18 years
• 19 to 24 years
• 25 to 29 years
• 30 years or older

41. What is your gender?
• Female
• Male

42. What is your course year in school?
• First year
• Second year
• Third year
• Fourth year
• Fifth year
• Sixth year
• Seventh year
### Demographic and Descriptive Data

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentages (n)</th>
<th>Mean (SD)</th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>74.4(215)</td>
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<tr>
<td>Male</td>
<td>25.6(74)</td>
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<tr>
<td><strong>Age</strong></td>
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<td>23.10(5.36)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>White</td>
<td>89.3(258)</td>
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<tr>
<td>African American</td>
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<tr>
<td>Hispanic/Latino</td>
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<tr>
<td>Asian</td>
<td>3.5(10)</td>
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<tr>
<td>Other</td>
<td>1.7(5)</td>
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<td><strong>Marital Status</strong></td>
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<tr>
<td>Never married</td>
<td>75.4(218)</td>
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<tr>
<td>Married</td>
<td>12.5(36)</td>
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<tr>
<td>Separated</td>
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<tr>
<td>Divorced</td>
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<tr>
<td>Living together</td>
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<td>Other</td>
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<td><strong>Living Arrangement</strong></td>
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<td>On campus by myself</td>
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<tr>
<td>On campus with others</td>
<td>6.9(20)</td>
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<tr>
<td>Off campus by myself</td>
<td>7.3(21)</td>
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<tr>
<td>Off campus with others</td>
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<td><strong>Program</strong></td>
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<td>4 year BSN program</td>
<td>84.8(245)</td>
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<td>RN/BSN program</td>
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<td>Accelerated program</td>
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<tr>
<td><strong>Level</strong></td>
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<td>First year sophomore</td>
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<td>Second year junior</td>
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<td>Third year senior</td>
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<td>Other (specify)</td>
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<td><strong>GPA</strong></td>
<td>3.56(.27)</td>
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<tr>
<td><strong>Average hours worked weekly</strong></td>
<td>15.02(11.42)</td>
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## Appendix E

Correlations Table; N=289

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<tr>
<th>Measure</th>
<th>ATTITUDE SUPPORTING BANNING OF SMOKING</th>
<th>HEALTH CARE PROVIDER ROLE</th>
<th>KNOWLEDGE ABOUT SMOKING ASSESSMENT</th>
<th>KNOWLEDGE ABOUT SMOKING CESSATION</th>
<th>EDUCATION ABOUT DANGERS OF SMOKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>r=.177**; p=.003</td>
<td>r=.020; p=.007</td>
<td>r=.165**; p=.007</td>
<td>r=.149*; p=.014</td>
<td>r=.141*; p=.020</td>
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</table>

b