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Tobacco control: are we appropriately training future health professionals

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Tobacco Control: Are We Appropriately Training Future Professionals?

Francisco Soto Mas, MD, PhD, MPH
Julia Valderrama Alberola, MD, MPH
Jan Brogger, MD, PhD
Chiehwen Ed Hsu, PhD, MPH

Abstract: Information on how health professionals perceive tobacco use as well as their attitudes toward tobacco control is scarce. This study assessed the attitudes and perceptions of public health students toward tobacco use and tobacco control, which constitutes a necessary first step in designing effective training strategies. Although the majority of respondents agreed that tobacco use constitutes a relevant public health problem, they did not perceive tobacco control to be a public health priority. Academic institutions may not be properly training public health students, and may therefore be missing the opportunity to advance tobacco control at the national and global levels.

The need for effective tobacco control initiatives has been sufficiently established. Smoking continues to be the single most important cause of preventable death in the US, responsible for 440,000 deaths yearly (CDC, 2002). Globally, tobacco kills almost 5 million people annually, and by the year 2030, smoking will be responsible for 10 million deaths per year. This represents higher mortality than that caused by AIDS, tuberculosis, traffic accidents, killings, and suicides altogether (World Health Organization, 2002).

One of the US public health objectives for the year 2010 is to reduce the prevalence of cigarette smoking among adults to ≤12% (objective 27.1a) (USDHHS, 2000). Despite the consistent decline in smoking prevalence from 25% in 1993 to 22.8% in 2001, a recent study by the CDC estimated that overall prevalence is not decreasing at a rate that will meet the national health objective by 2010. The study recommends an increased emphasis on state-level comprehensive tobacco control programs (CDC, 2003). Such programs consist of a combination of interventions and initiatives with the goal of reducing tobacco-related disease, disability, and death.

PUBLIC HEALTH STUDENTS AND TOBACCO CONTROL

The response of public health to the devastating consequences of tobacco use includes the implementation of "evidence-based" state and community level interventions that involve education, prevention and smoking cessation programs for youth and adults, advocacy and policy development, and counter-marketing campaigns. In this context, "evidence-based" implies strong evaluation and management components (CDC, 1999).

The CDC's recommendations mean that states willing to implement comprehensive programs must rely on highly skilled personnel and support staff. *Best Practices for Comprehensive Tobacco Control Programs*, the CDC's sponsored guide for planning and implementing state level programs, consists of a multifaceted intervention aimed at: 1) preventing the initiation of tobacco use among young people, 2) promoting quitting among young people and adults, 3) eliminating nonsmokers' exposure to environmental tobacco smoke (ETS), and 4) identifying and eliminating the disparities related to tobacco use and its effects on different population groups. The CDC recommends that

Francisco Soto Mas, MD, PhD, MPH is affiliated with the Department of Social and Behavioral Sciences, School of Public Health at the University of North Texas Health Science Center. ***Julia Valderrama Alberola, MD, MPH*** is affiliated with the Pan American Health Organization in Washington, DC. ***Jan Brogger, MD, PhD*** is affiliated with the Center for Clinical Molecular Medicine and Medical Genetics at the Haukeland University Hospital. ***Chiehwen Ed Hsu, PhD, MPH*** is affiliated with the Department of Public and Community Health at the University of Maryland. Address all correspondence to Francisco Soto Mas, Department of Social and Behavioral Sciences, School of Public Health, University of North Texas Health Science Center, 1900 Tremont Ave., Fort Worth, Texas 76107; PHONE: 817-763-5701; FAX: 817-763-5701; E-MAIL: fsoto2005@yahoo.com.

programs implement all nine components of comprehensive tobacco control programs identified in the guide (CDC, 1999) (see Figure 1).

The complexity of comprehensive, evidence-based, multilevel programs require the active involvement of public health professionals with specific training in tobacco control. How are public health training institutions responding to the challenge? A recent survey conducted by the Association of Schools of Public Health (ASPH) among its 32 member schools found that, although the majority of the institutions that answered the survey (81%) offered "some kind of tobacco-related education and training," only about half of them offered tobacco-related courses in which students could earn academic credit hours. More significantly, during the academic year 2001-2002, less than 5% of all master's and doctoral students were involved in tobacco-related studies. There were no schools offering tracks for academic specialization in tobacco use prevention and control (ASPH, n.d.). Although ASPH members may not constitute a comprehensive representation of the more than 300 academic programs offering bachelor's, master's, and doctoral degrees in health education and health promotion (Wright, Hann, McLeroy, Steckler, Matulionis, Auld, M., et al., 2003), it can be assumed that they include those schools with the most comprehensive academic programs, as they must pass an exhaustive accreditation process. Despite the limitations of the ASPH study, it does appear that the availability of tobacco control training in academic institutions could and should be increased.

Because of the public health relevance of tobacco use, a systematic assessment of the training and research opportunities of future public health professionals is a necessary endeavor. Equally important is to understand how public health students perceive tobacco control, an issue that has not been discussed in the literature. Published research on health students' views of tobacco-related issues have explored a variety of topics, from policy to training, but most of these studies focus on those students pursuing careers in clinical practice such as medicine, nursing, pharmacy, dentistry or physiotherapy (Fried, Reid, & DeVore, 2004; Nagy, Barabas, & Nyari, 2004; Jenkins & Ahijevych, 2003; Rigotti, Moran, & Wechsler, 2003; Rikard-Bell, Groenlund, & Ward, 2003; Piko, 2002; Spangler, George, Long Foley, & Crandall, 2002; Steptoe, Wardle, Cui, Baban, Glass, Pelzer, et al., 2002; Daudt, 1999; Richmond, Debono, Larcos, & Kehoe, 1998; O'Connor & Harrison, 1992; Lee, 1989). The purpose of this study was to assess the attitudes and perceptions of public health students towards tobacco use and tobacco control initiatives.

METHODOLOGY

Participants consisted of master's level public health students at Boston University School of Public Health (BUSPH). The email-based survey was developed by the research team. Questions were selected for each domain of interest and discussed by team members. The first draft of the survey was then presented to a panel of three experts that included a tobacco control specialist, a health educator, and a linguist, who provided comments on both content and grammar. After incorporating experts' comments, the survey was piloted with 23 prospective participants to obtain logistical information on survey administration and improve its face validity. The purpose was to involve those who would ultimately use the instrument in the development process. The group represented a broad range of prospective participants, with varied nationality, age, occupation, etc. Electronic addresses were obtained through the Office for Student Services. The survey was inserted in the body of an e-mail message, which also included information on confidentiality, purpose of the study, and instructions for completing and returning the survey. One week after the first mailing, a follow-up e-mail was sent to non-respondents. Pilot test participants were asked to provide feedback on format, content, and completion time. Overall response rate was 74% (n = 17). A hard copy of every message containing the completed returned sur-

Figure 1. Nine components of comprehensive tobacco control programs.

1. Community Programs to Reduce Tobacco Use
2. Chronic Disease Programs to Reduce the Burden of Tobacco-Related Diseases
3. School Programs
4. Enforcement
5. Statewide Programs
6. Counter-Marketing
7. Cessation Programs
8. Surveillance and Evaluation
9. Administration and Management

vey was obtained, and e-mail addresses were removed from the messages upon receipt. Respondents provided positive feedback and only one question regarding nationality was reworded based on their comments. The reported average completion time was 8.5 minutes.

DATA COLLECTION

The final instrument consisted of 19 items, including eligibility confirmation and demographic questions. The survey was emailed to the entire BUSPH student roster (n = 751). A follow-up message was sent approximately two months after the first mailing. Participants were asked to report on current and past tobacco use, as well as their perceived role in tobacco control. Other questions explored participants' attitudes and perceptions regarding the public health burden of tobacco use, risks and consequences of tobacco use, and specific tobacco control activities (such as legislation on tobacco advertising and second-hand smoke). Response scales included 4-item Likert-type scales of agreement, from "strongly agree" to "strongly disagree", and categorical scales. An open-ended question was included for country of residence.

DATA ANALYSIS

Respondents were classified in two categories: 1) national (those reporting US as country of permanent residency) vs. international (those reporting country of residency other than the US). Statistical analyses were performed using SPSS 11.5.0 (Chicago, Ill: SPSS, Inc. 1989-2002), and included frequencies, chi-square, and t-test. Confidence intervals for smoking prevalence were computed using the Exact Confidence Interval Calculator (http://www.causascientia.org/math_stat/ProportionCI.html). Independent samples t-tests were performed on tobacco priority scores using residency status and current smoking status as independent variables. Variables that represented rank were recorded so that the higher the rank (1st, 2nd, etc.) the greater the value (7, 6, etc.).

RESULTS

The overall response rate was 32.3% (n = 243). Demographic characteristics of respondents, including country of permanent residency and occupation, are summarized in Table 1. The majority of respondents (79%) were US residents. Statistically significant differences by age and gender were found. Although in both groups most respondents were females, US residents were 4.2 times more likely to be females (95% Confidence Interval: 1.995 to 8.840). Significant differences ($p < 0.001$) were also observed in the distribution of occupation. More than half of non-US resident students reported being physicians. Occupations most frequently reported among US residents included health research (26.1%) and public health (22.2%). Regarding smoking status of respondents, no significant differences were found in the frequency of "ever smoked" ($p = 0.631$) or "current smoking" status ($p = 0.687$) (see Table 2).

Most respondents (97.9%) considered tobacco to be a public health problem, and agreed (95.8%) that tobacco control should be a public health priority. However, more than 41% responded being little or not concerned about the risks and consequences of tobacco use, with a significantly higher percentage of US resident students (65.1%; $p < 0.001$) being very

Table 1. Study Participants by age Group, Gender, Occupation, and Residency

	Residency							
	National (US resident) (n = 190)		International (All other) (n = 51)		Total (n = 241)		X^2	(p-value)
Age	N	(%)	N	(%)	N	(%)		
<=25	62	(32.8)	8	(15.7)	70	(29.2)	8.227	(0.016)
26-35	100	(52.9)	29	(56.9)	129	(53.8)		
>=36	27	(14.3)	14	(27.5)	41	(17.1)		
Gender								
Female	168	(89.4)	34	(66.7)	202	(84.5)	15.792	(<0.001)
Male	20	(10.6)	17	(33.3)	37	(15.5)		
Occupation								
MD	16	(8.9)	23	(51.1)	39	(17.3)	46.278	(<0.001)
Public Health	40	(22.2)	6	(13.3)	46	(20.4)		
Health Research	47	(26.1)	3	(6.7)	50	(22.2)		
Other	77	(42.8%)	13	(28.9)	90	(40.0)		

Table 2. Participant's Answers to key Tobacco Questions, by Residency

	Residency				
	National (US resident) (n = 190)	International (All other) (n = 51)	Total (n = 141)	X^2	(p-value)
Ever smoked	N (%)	N (%)	N (%)		
Yes	60 (31.7)	18 (35.3)	78 (32.5)	0.230	(0.631)
No	129 (68.3)	33 (64.7)	162 (67.5)		
Currently smoke					
Yes	12 (6.3)	5 (9.8)	17 (7.1)	0.752	(0.687)
No	48 (25.4)	13 (25.5)	61 (25.4)		
Never smoked	129 (68.3)	33 (64.7)	162 (67.5)		
Tobacco public health problem					
Yes	183 (97.9)	47 (97.9)	230 (97.9)		
No	4 (2.1)	1 (2.1)	5 (2.1)		
Tobacco public health priority					
Strongly agree/Agree	179 (95.2)	50 (98.0)	229 (95.8)		(0.694)*
Disagree	9 (4.8)	1 (2.0)	10 (4.2)		
Concerned risks					
Very concerned/ Concerned	123 (65.1)	18 (35.3)	141 (58.8)	14.703	(<0.001)
Little concerned	66 (34.9)	33 (64.7)	99 (41.3)		
Impact tobacco use prevention/ control					
Yes	78 (62.4)	22 (84.6)	100 (66.2)	4.749	(0.029)
No	47 (37.6)	4 (15.4)	51 (33.8)		

*Fisher's Exact Test

concerned about the risks and consequences of tobacco use, as compared to non-US residents (35.3%). In contrast, a significantly higher relative frequency (84.6%; $p = 0.029$) of non-US residents felt that they could play a role in tobacco use prevention and control in their countries of residency.

The following seven measures for tobacco use prevention and control were ranked by respondents: advertising restrictions, policy and regulation, health education, cessation programs, school-based programs, increased taxation, and law enforcement (see Table 3). Respondents ranked policy and regulation as the most important measure for tobacco use prevention and control. Similarly, they agreed that health education was the second most important measure.

Although the majority of respondents recognized the public health importance of tobacco use, tobacco control was not identified as a primary (highest or high) public health priority. HIV/AIDS and other infectious diseases, maternal and child health, and water and sanitation were given higher public health priority scores by respondents (see Table 4). When asked about the most effective measures for tobacco use prevention and control, less than 40% felt that tobacco advertising should be forbidden, less than 4% felt that smoking in public places should be legislated. Fifty-two percent felt that smoking in public places should not be forbidden. Regarding tobacco farming, 47% felt that tobacco farming should be legislated, and 22% believed that it constitutes an income generating activity (see Table 5).

Results of t-test scores indicated that US residents had higher tobacco priority scores than non-US residents ($t = 2.592$, $df = 239$, $p = 0.010$), and current smokers had lower scores than nonsmokers ($t = 3.804$, $df = 239$, $p < 0.001$).

DISCUSSION AND RECOMMENDATIONS

The national public health objective of halving adult smoking by the year 2010 is very ambitious, and only through sustained, coordinated effort will the objective be obtainable. Comprehensive programs have the potential of contributing to tobacco control, and given their complexity, such programs require the involvement of public health professionals with specific training in tobacco control. Unfortunately, we are not providing public health students with the necessary training opportunities they need to contribute to

Table 3. Ranking of most Effective Measures for Tobacco use Prevention and Control, by Residency

	Residency									
	National (US resident) (n = 190)					International (All other) (n = 51)				
	Rank					Rank				
Measures	1	2	3	4	5	1	2	3	4	5
Advertising restrictions	N=14	N=34	N=28	N=37	N=17	N=8	N=4	N=4	N=9	N=8
	(7.4%)	(17.9%)	(14.7%)	(19.5%)	(8.9%)	(15.7%)	(7.8%)	(7.8%)	(17.6%)	(15.7%)
Policy and regulation	N=43	N=24	N=34	N=20	N=28	N=13	N=10	N=8	N=9	N=2
	(22.6%)	(12.6%)	(17.9%)	(10.5%)	(14.7%)	(25.5%)	(19.6%)	(15.7%)	(17.6%)	(3.9%)
Health education	N=33	N=37	N=26	N=20	N=22	N=11	N=13	N=9	N=4	N=3
	(17.4%)	(19.5%)	(13.7%)	(10.5%)	(11.6%)	(21.6%)	(25.5%)	(17.6%)	(7.8%)	(5.9%)
Cessation programs	N=16	N=22	N=28	N=36	N=36	N=0	N=6	N=2	N=5	N=9
	(8.4%)	(11.6%)	(14.7%)	(18.9%)	(18.9%)	(0.0%)	(11.8%)	(3.9%)	(9.8%)	(17.6%)
School•based programs	N=37	N=33	N=33	N=26	N=24	N=8	N=8	N=14	N=5	N=6
	(19.5%)	(17.4%)	(17.4%)	(13.7%)	(12.6%)	(15.7%)	(15.7%)	(27.5%)	(9.8%)	(11.8%)
Increased taxation	N=35	N=23	N=20	N=21	N=21	N=10	N=7	N=5	N=6	N=6
	(18.4%)	(12.1%)	(10.5%)	(11.1%)	(11.1%)	(19.6%)	(13.7%)	(9.8%)	(11.8%)	(11.8%)
Law enforcement	N=5	N=6	N=8	N=14	N=24	N=6	N=4	N=4	N=6	N=9
	(2.6%)	(3.2%)	(4.2%)	(7.4%)	(12.6%)	(11.8%)	(7.8%)	(7.8%)	(11.8%)	(17.6%)

Table 4. Public Health Priority Topic by Category of Priority* and Residency

	Residency									
	National (US resident) (n = 190)					International (All other) (n = 51)				
Topic	Highest	High Priority	Priority	Low	Lowest	Highest	High Priority	Priority	Low	Lowest
HIV/AIDS & infectious diseases	N=47 (24.7%)	N=74 (38.9%)	N=51 (26.8%)	N=10 (5.3%)	N=3 (1.6%)	N=18 (35.3%)	N=15 (29.4%)	N=10 (19.6%)	N=7 (13.7%)	N=1 (2.0%)
Maternal and child care	N=43 (22.6%)	N=46 (24.2%)	N=49 (25.8%)	N=35 (18.4%)	N=17 (8.9%)	N=20 (39.2%)	N=16 (31.4%)	N=10 (19.6%)	N=5 (9.8%)	N=0 (0.0%)
Tobacco control	N=39 (20.5%)	N=48 (25.3%)	N=50 (26.3%)	N=35 (18.4%)	N=18 (9.5%)	N=4 (7.8%)	N=7 (13.7%)	N=19 (37.3%)	N=19 (37.3%	N=2 (3.9%)
Water & sanitation	N=16 (8.4%)	N=21 (11.1%)	N=31 (16.3%)	N=51 (26.8%)	N=68 (35.8%)	N=6 (11.8%)	N=17 (33.3%)	N=14 (27.5%)	N=11 (21.6%)	N=3 (5.9%)
Bio-terrorism	N=44 (23.2%)	N=27 (14.2%)	N=19 (10.0%)	N=44 (23.2%)	N=55 (28.9%)	N=2 (3.9%)	N=2 (3.9%)	N=2 (3.9%)	N=5 (9.8%)	N=39 (76.5%)

*Participants could select more than one issue per category of priority.

Table 5. Study Participants by Support of Legislative Approaches, and Residency

	Residency		
	National (US only) (n = 190)	**International (n = 51)**	**Total**
Tobacco advertising should be	**N (%)**	**N (%)**	**N (%)**
Legislated & restricted to certain locations and media	114 (60.6)	22 (43.1)	136 (56.9)
Forbidden everywhere	68 (36.2)	26 (51.0)	94 (39.3)
Allowed everywhere	6 (3.2)	3 (5.9)	9 (3.8)
Smoking in public places should be			
Allowed	2 (1.1)	0 (0.0)	2 (0.8)
Legislated	6 (3.2)	3 (6.0)	9 (3.8)
The existing legislation should be enforced	19 (10.1)	6 (12.0)	25 (10.5)
Smoking in public places should be restricted to designated areas only	68 (36.2)	20 (40.0)	88 (37.0)
Smoking in public places should be forbidden completely	3 (49.5)	21 (42.0)	114 (47.9)
Tobacco farming should be			
Allowed because it is an income generating activity	39 (21.7)	9 (23.1)	48 (21.9)
Legislated	88 (48.9)	14 (35.9)	102 (46.6)
Forbidden, but an alternative provided	53 (29.4)	16 (41.0)	69 (31.5)

the achievement of the *Healthy People 2010* tobacco objectives.

The results of this study indicate that, although the majority of participating public health students agreed that tobacco use constitutes a relevant public health problem, fewer were concerned about the risks and consequences of tobacco use. Consistently, tobacco control was not prioritized accordingly: HIV, maternal and child health, and bioterrorism obtained a higher rank in the public health priority list of respondents. These results indicate that participants in this survey might not be appropriately trained in tobacco control, and that their attitudes and perceptions toward tobacco use and tobacco control are not consistent with the public health burden of tobacco use. Additionally, US institutions may be missing the opportunity to educate international students on the potential dangers of tobacco use and the need for coordinated and aggressive global tobacco control.

Non-US residents gave tobacco control a lower priority score than U.S residents. This was an expected response that may be explained by a perceived need for addressing current pressing health problems, and the fact that the cigarette epidemic may be in its initial stages in many respondents' countries of residence. Similarly, the relevance given to bioterrorism may be the consequence of the current US and global sociopolitical situation caused by recent terrorist events.

Respondents' opinions on advertising were consistent with current tobacco control efforts, and only a small percentage supported no restrictions. On the other hand, it seems that respondents did not understand the relevance of smoking in public places and secondhand smoke as a risk factor for several health-related problems, including cancer, pregnancy and neonatal problems, pediatric chronic and acute conditions, and cardiovascular disease. Consistently, less than half supported complete smoking ban in public places. Finally, the majority of respondents tended to believe that tobacco farming is a source of income. They did not indicate awareness of the fact that in most countries subsidies make tobacco farming a profitable activity, as do the manufacturing and selling of tobacco products.

The fact that smokers gave tobacco control a lower priority score than non-smokers was an expected result consistent with the literature. Furthermore, we believe that the high education level of respondents influenced their reported low smoking prevalence, which is consistent with other studies.

To our knowledge, this is the first study assessing the attitudes and perceptions of public health students toward tobacco use and control. The results of this study are consistent with the 2001-2002 ASPH tobacco-related survey, and both indicate the need for increased resources to train future public health professionals in tobacco control. Additionally, since this

was an exploratory study, we recommend further research on the attitudes and perceptions of public health students. Tobacco continues to be the most significant preventable cause of death and disability in the US If we are to reach our health objectives for the year 2010, public and private agencies must support academic and research-related tobacco control training opportunities in schools of public health.

It is important to mention a number of limitations to this study. First, the response rate was low. Electronic mail was selected due to cost considerations, but also because recent graduates are a group that may be difficult to reach. It was assumed that the participant population in this study could best be reached by email. Secondly, smokers are known to have a lower response rate to tobacco use surveys. Because of the focus of the study, survey respondents' probably under-represented smokers. It is also assumed that those who were less interested in tobacco control were probably less likely to respond.

Regarding validity, it is important to note that respondents may have provided answers that they believed would meet the approval of the investigators. The non-response analysis, though weakly powered, did not find any significant differences between early and late responders. Both the non-response bias and the appeasement bias suggest that findings represent an optimistic estimate of priority given to tobacco control. It is likely that respondents' attitude toward tobacco control is more progressive than that of the general public. Yet, the possibility that any non response bias would actually go in the other direction cannot be discarded. Also, since this is a cross sectional study, any assumption about causality is limited.

In conclusion, this pilot project found sufficient evidence for supporting increased tobacco control training in US public health schools. Similarly, it supports the need for collecting data on the attitudes and perceptions of public health students related to tobacco use and tobacco control.

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REFERENCES

Association of Schools of Public Health. (n.d.). *Tobacco Studies Survey 2001-2002*. Retrieved November 14, 2003, from http://www.asph.org

CDC. (2003). Cigarette Smoking Among Adults. United States, 2001. *MMWR, 52*(40), 953-956.

CDC. (2002). Annual smoking-attributable mortality, years of potential life lost, and economic costs-United States, 1995-1999. *MMWR, 51*, 300-303.

CDC. (1999). Best Practices for Comprehensive Tobacco Control Programs, August. Retrieved November 18, 2003, from http://www.cdc.gov/tobacco/bestprac.htm

Daudt, A., Alberg, A., Prola, J., Fialho, L., Petracco, A., Wilhelms, A., et al. (1999). A first step incorporating smoking education into Brazilian medical school curriculum: Results of a survey to assess the cigarette smoking knowledge, attitudes, behaviour, and clinical practices of medical students. *Journal of Addictive Diseases, 18*(1), 19-29.

Fried, J., Reid, B., & DeVore, L. (2004). A comparison of health professions student attitudes regarding tobacco curricula and interventionist roles. *Journal of Dental Education, 68*(3), 370-377.

Jenkins, K., & Ahijevych, K. (2003). Nursing students' belief about smoking, their own smoking behaviors, and use of professional tobacco treatment intervention. *Applied Nursing Research, 16*(3), 164-172.

Lee, C. (1989). Stereotypes of smokers among health science students. *Addictive Behaviors, 14*(2), 327-333.

Nagy, K., Barabas, K., & Nyari, T. (2004). Attitudes of Hungarian healthcare professional students to tobacco and alcohol. *European Journal of Dental Education*, (Feb 8, Suppl 4), 32-35.

O'Connor, A., & Harrison, M. (1992). Survey of smoking prevalence among Canadian students and registered nurses. *Canadian Journal of Public Health, 83*(6), 417-421.

Piko, B. (2002). Does knowledge count? Attitudes toward smoking among medical, nursing, and pharmacy students in Hungary. *Journal of Community Health, 27*(4), 269-276.

Richmond, R., Debono, D., Larcos, D., & Kehoe, L. (1998). Worldwide survey of education on tobacco in medical schools. *Tobacco Control, 7*, 247-252.

Rigotti, N., Moran, S., & Wechsler, H. (2003). Students' opinion of tobacco control policies recommended for US colleges: A national survey. *Tobacco Control, 12*, 251-256.

Rikard-Bell, G., Groenlund, C., & Ward, J. (2003). Australian dental students' views about smoking cessation counseling and their skills as counselors. *Journal of Public Health Dentistry, 63*(3), 200-206.

Spangler, J., George, G., Long Foley, K., & Crandall, S. (2002). Tobacco intervention training: current efforts and gaps in US medical schools. *JAMA, 288*, 1102-1109.

Steptoe, A., Wardle, J., Cui, W., Baban, A., Glass, K., Pelzer, K., et al. (2002). An international comparison of tobacco smoking, beliefs and risk awareness in university students from 23 countries. *Addiction, 97*, 1561-1571.

USDHHS. (2000). *Healthy People 2010: Understanding and Improving Health* (2nd ed.). Washington, DC: US Government Printing Office.

World Health Organization. (2002). *Quantifying selected major risks to health. World health report 2002*. Geneva: World Health Organization. Retrieved January 21, 2004, from http://www.who.int/whr/2002/Chapter4.pdf

Wright, K., Hann, N., McLeroy, K., Steckler, A., Matulionis, R., Auld, M., et al. (2003). Health education leadership development: A conceptual model and competency framework. *Health Promotion Practice, 4*(3), 293-302.

CHES AREA

Responsibility X: Advancing the Profession of Health Education

Competency A: Provide a critical analysis of current and future needs in health education.