

RESEARCH PAPER

Students' opinion of tobacco control policies recommended for US colleges: a national survey

N A Rigotti, S Regan, S E Moran, H Wechsler

Tobacco Control 2003;12:251–256

See end of article for authors' affiliations

Correspondence to:
Nancy A Rigotti, MD,
Tobacco Research and
Treatment Center,
Massachusetts General
Hospital, 50 Staniford
Street, 9th floor, Boston,
MA 02114, USA;
nrigotti@partners.org

Received
31 December 2003
Accepted 7 May 2003

Objective: Comprehensive tobacco control policies for US colleges and universities have been proposed by several groups in order to counter the rising use of tobacco by students enrolled in these institutions. Student opinion of these policies is not known, and concern about student opposition is one barrier that deters administrators from adopting the policies. This study measured student support for recommended college tobacco control policies.

Design: Mailed survey of US college students (2001 Harvard School of Public Health College Alcohol Study).

Setting: 119 nationally representative, four-year colleges and universities in the USA.

Participants: 10 904 randomly selected undergraduate students enrolled at participating schools.

Main outcome measures: Students' opinion of 7 proposed tobacco control policies.

Results: A majority of students supported each policy. Over three quarters of students favoured smoke-free policies for all college buildings, residences, and dining areas, while 71% supported prohibiting tobacco advertising and sponsorship of campus social events, 59% favoured prohibiting tobacco sales on campus, and 51% supported smoke-free campus bars. All policies had more support among non-smokers than smokers ($p < 0.001$). Among smokers, support for policies was inversely related to intention to quit and intensity of tobacco consumption. Because college students' tobacco consumption is low, a majority of smokers favoured banning smoking in college buildings and dining areas and prohibiting tobacco marketing on campus.

Conclusions: Student support for proposed campus tobacco control policies is strong, even among smokers, and broadly based across demographic subgroups. These findings should provide reassurance to college administrators who are considering adopting these policies.

Tobacco use among young adults aged 18–24 years is a growing public health concern.¹ In 1997, 31% of young adults attended a college or university, making these institutions important channels for influencing young adult behaviour.² The prevalence of cigarette smoking among US college students rose 28% between 1993 and 1999.^{3–4} The reason for this increase is unclear, but elements in the college environment may encourage tobacco use. In 1999, only 27% of US colleges banned smoking in all buildings including student residences.⁵ Tobacco products were readily available on college campuses, and access to tobacco treatment services was limited.⁷ Furthermore, a growing body of evidence from tobacco industry documents demonstrates that the industry markets actively on and around college campuses, advertising in college and alternative newspapers and sponsoring social events on campus and at nearby bars where free cigarettes and other brand items are distributed.^{6–8} Exposure to tobacco promotions at social events has been associated with increased tobacco use by college students.⁹

To discourage tobacco use among college students, a similar set of tobacco control policies for US colleges and universities was recommended by the American College Health Association and American Cancer Society.^{10–11} These organisations developed their recommendations independently, each adapting to the college environment tobacco control policies that are effective in the general population. Both groups recommended that colleges prohibit smoking in all campus buildings (including student residences and eating areas), prohibit tobacco advertising on campus and in college publications, prohibit tobacco sponsorship of campus events, prohibit the sale of tobacco on campus, and provide ready access to smoking cessation treatment. While there is limited evidence for the efficacy of these recommended policies in the college envi-

ronment at present, data are beginning to appear. For example, one cross-sectional study found an association between smoke-free policies in student residences and lower smoking prevalence, especially among students who did not enter college as regular smokers.¹²

A survey of 50 US public universities conducted in 2001 reported a low prevalence of recommended tobacco control policies, despite a recent increase in the prevalence of smoke-free policies in student residences.¹³ There is little other information about the prevalence of recommended tobacco control policies or about which factors facilitate and impede their adoption. Existing data indicate that college administrators do not regard tobacco use to be a high priority problem, in part because it has less immediate morbidity and mortality than other problems, such as alcohol use.^{5–14} Furthermore, administrators do not perceive strong student demand for strengthening tobacco control policies, and some are concerned about potential student opposition to changing campus tobacco control policies.^{14–15} Students' opinion of the proposed tobacco control policies has not been measured, but it could provide valuable information with the potential to influence administrators' policy decisions.

We analysed survey data from a large, nationally representative random sample of US college students to identify the extent and predictors of student support for recommended campus tobacco control policies. We hypothesised that support for all policies would be stronger among non-smokers than smokers.

METHODS

Sample

We analysed data from the 2001 Harvard School of Public Health College Alcohol Study (CAS), which surveyed a

random sample of students enrolled in 120 four-year US colleges and universities.¹⁶ For the survey, each school provided a list of 215 randomly selected students from all full time undergraduate students enrolled during the 2000–01 school year. One college was excluded from analysis because its response rate was substantially lower than the others, leaving 119 schools.

The schools, located in 38 states and the District of Columbia, were selected to create a nationally representative sample of four-year US colleges and universities.¹⁷ Sixty nine per cent of respondents attended public colleges and 31% attended private colleges; the corresponding US distribution is 68% and 32%, respectively.¹⁸ Forty seven per cent of respondents attended large colleges (> 10 000 students), 23% attended medium sized colleges (5001–10 000 students), and 29% attended small colleges (< 5000 students); the national distribution is 37%, 24%, and 40%, respectively.¹⁸ Large colleges are over represented in the CAS sample because they were selected with probability proportional to size. Thirteen per cent of students attended schools with a religious affiliation, compared with 16% nationwide.¹⁸

Surveys were mailed to 21 055 students in February 2001. Three separate mailings were sent within three weeks: a questionnaire, a reminder postcard, and a second questionnaire. Responses were anonymous. Cash prizes were offered to encourage response. The response rate was 52% (n = 10 904).

Questionnaire and measures

The questionnaire assessed students' demographic characteristics, tobacco use, opinion of proposed tobacco control policies, awareness of their school's policy about smoking in student residences, and the current smoking policy of their residence. Demographic factors assessed were age, sex, ethnicity, year in school, marital status, and residence (on-campus or off-campus). Students were asked if they lived in housing designated as smoke-free, and if not, whether they would like to do so. Students who reported smoking a cigarette in the past 30 days were defined as current smokers. Cigarette smokers were asked to specify daily cigarette consumption and frequency of smoking ("On how many of the past 30 days did you smoke cigarettes?").

To assess attitudes regarding tobacco control policies on campus, students were asked, "To what extent do you support or oppose the following possible school policies about smoking?" Response options were strongly support, support, oppose, and strongly oppose. Students were asked about three types of tobacco control policies: clean indoor air (four items), tobacco marketing restrictions (two items), and tobacco sales restrictions (one item). Clean indoor air policies tested were smoking prohibitions in: (1) all campus buildings; (2) all parts of residence halls including student sleeping quarters; (3) on-campus restaurants or dining areas; and (4) on-campus bars or pubs. Marketing restrictions assessed were prohibitions on tobacco industry sponsorship of school parties or events and tobacco advertisements in student newspapers. Students were also asked their opinion of prohibiting the sale of tobacco products on campus.

A separate written questionnaire was sent to administrators at each school in the sample. In 2001, two questions asked about the school's smoking policies. Administrators were asked whether smoking was prohibited everywhere on campus, and if not, whether smoking was prohibited in residence hall private rooms and common areas. Responses were obtained from all schools.

Analysis

Statistical analyses were carried out using STATA.¹⁹ Data were weighted to account for colleges' different sampling fractions and to match each college's distribution of sex, race (white/non-white), and age (< 18 years, 18–22 years, > 22

years). Analyses were conducted to examine the potential bias introduced by non-respondents. Response rates did not differ between colleges that did and did not (1) prohibit smoking everywhere on campus (p=0.85) or (2) prohibit smoking in student residences (p = 0.60). The Spearman correlation coefficient between a college's current smoking rate and its response rate was 0.15 (p = 0.10). There was no significant difference in current smoking rates between students who responded before and after the second mailing (24.8% v 26.0%, p = 0.19). College response rate was included as a continuous covariate in all multivariate regression models to control for non-response bias.

Attitudes toward policies were dichotomised into two categories: support or oppose. Bivariate analyses identified student level and college level characteristics associated with attitudes toward tobacco control policies. Significance was assessed with χ^2 tests and χ^2 tests of trend for categorical variables and *t* tests for continuous variables. Multivariate models were created to identify student level and college level factors that were independently associated with each proposed policy. All models adjusted for each schools' survey response rate and included student age, sex, ethnicity, year in school, marital status, and current cigarette smoking. College level factors included in models were size of enrollment (< 5000, 5000–10 000, or > 10 000 students), geographic region, public versus private status, competitiveness for admission (based on percentage of applicants accepted), school smoking policy (for college residences), and school smoking rate (divided into tertiles). We used the generalised estimating equations (GEE) approach to fitting the logistic regression models to account appropriately for clustered outcomes arising in our sampling scheme.^{20–21} Adjusted odds ratios with 95% confidence limits are reported.

RESULTS

Characteristics of the sample

Table 1 shows the demographic characteristics of the 10 904 respondents and compares their age, sex, and racial distribution with the distributions of these characteristics among all full time undergraduates at the 119 participating schools and among a national sample of full time undergraduates.¹⁸ Respondents' age and race were comparable to the comparison populations, but a greater proportion of respondents were female than in the comparison populations. Of the 119 schools in the sample, 22 (18%) prohibited smoking everywhere on campus. An additional 31 schools (26%) prohibited smoking in private rooms in college residences but not everywhere on campus.

Attitudes about tobacco control policies

A majority of students supported each of the seven proposed policies (table 2). More than three quarters of students supported a ban on smoking in all campus buildings, including residence halls and dining areas. Nearly as many supported restrictions on tobacco marketing on campus. Sixty per cent supported banning tobacco sales on campus and half favoured banning tobacco in campus bars.

Support for all policies was significantly stronger among non-smokers than smokers (table 2). However, even among smokers, a majority favoured five of the seven policies, including smoke-free residence halls and dining areas, and bans on tobacco sponsorship of campus social events and tobacco advertising on campus. Table 2 also shows that among smokers, support for each policy was inversely related to tobacco consumption.

Additional support for smoke-free residences is found in students' responses to questions about their preferences for living quarters. Of the 39% of respondents who lived in a campus residence, 59% reported that their housing was designated

Table 1 Respondent characteristics

	Respondents at participating schools (%) (n=10904)	Students enrolled at the participating schools (%)	National sample of undergraduates* (%)
Age (18–24 years)	80	90	84
Sex (female)	64	53	54
Race (white)	74	70	73
Year in school		†	†
Freshman	23		
Sophomore	22		
Junior	25		
Senior	23		
5th year	7		
Married	6	†	†
Residence		†	†
On-campus housing	39		
Off-campus housing	58		
Fraternity/sorority	3		

* US Department of Education, National Center for Education Statistics. Fall enrollment in Title IV degree granting postsecondary institutions, 1998. NCES 2002-162.¹⁸
 †Data not available.

Table 2 Student support for tobacco control policies proposed for college campuses

	All students (n=10905) (%)	Non-smokers (n=8103) (%)	All smokers (n=2736) (%)	p Value*	Occasional (<1 cig/day) (n=918) (%)	<10 cig/day (n=784) (%)	≥10 cig/day (n=748) (%)	p Value†
Smoke-free policies								
Prohibit smoking in all campus buildings	77	85	52	<0.0001	61	45	39	<0.0001
Prohibit smoking in student residences	75	85	45	<0.0001	58	39	29	<0.0001
Prohibit smoking in dining areas	80	88	57	<0.0001	63	52	38	<0.0001
Prohibit smoking in campus bars and pubs	51	62	18	<0.0001	23	13	10	<0.0001
Marketing restrictions								
Prohibit tobacco advertising on campus	71	77	53	<0.0001	54	55	49	>0.05
Prohibit tobacco sponsorship of social events	71	78	51	<0.0001	55	51	44	<0.0001
Restrictions on tobacco access								
Prohibit tobacco sales on campus	59	70	28	<0.0001	37	19	20	<0.0001

* χ^2 test (non-smokers v all smokers).

† χ^2 test of trend (occasional v light v heavy smokers).

as smoke-free, and over half (58%) of those who did not live in smoke-free housing stated that they would prefer to do so.

Factors associated with support for tobacco control policies

Tables 3 and 4 display independent predictors of student support for the proposed tobacco control policies. Support for all policies was most strongly associated with student smoking status, even after adjustment for other student and college level factors.

When these multivariate analyses were repeated among current smokers only, support for all tobacco control policies was greater among smokers who planned to quit in the next 30 days than among smokers not planning to quit (for example, for prohibiting smoking in all campus buildings: adjusted odds ratio (AOR) 1.58, 95% confidence interval (CI) 1.23 to 2.03; $p < 0.001$). Support for smoking restrictions in student residences, dining areas, campus bars, and all campus buildings was greater among lighter smokers (< 10 cigarettes/day) than among heavier smokers (for example, for prohibiting smoking in all campus buildings: AOR 1.52, 95% CI 1.14 to 1.98; $p < 0.01$) and among occasional smokers compared with daily smokers (AOR 1.39, 95% CI 1.08 to 1.82; $p < 0.05$). Support for marketing restrictions and for banning tobacco sales on campus did not vary by intensity of tobacco use.

Tables 3 and 4 demonstrate that all policies were more popular among females and married students than among males or unmarried students. Student support for all policies was higher at colleges in western states, at colleges with a lower smoking prevalence, and at schools that had already banned smoking in student residences.

Smoke-free policies for student residences and campus buildings were also more popular among schools in the north central states. These policies were less popular among students who live in campus residences. Smoke-free bars had more support among students in higher grades and among students at smaller schools. Support for tobacco marketing and sale restrictions, unlike smoke-free policies, varied by race, being more popular among non-whites than whites. These policies were also more popular at smaller schools. Age was a factor only for one policy: tobacco sales restrictions. Younger students were less supportive of this policy than older students, independent of grade level.

DISCUSSION

To our knowledge, this is the first study to report college students' opinions about the campus tobacco control policies recommended by the American College Health Association and American Cancer Society. The study found strong support for all proposed policies among a large, nationally representative sample of US college students. College administrators and policymakers may not have previously been aware of the breadth and depth of student support for tobacco control policies. Our findings should reassure officials who may have been concerned about student opposition to the policies.

As we hypothesised, support for tobacco control policies was stronger among non-smokers than smokers. Even so, most policies had substantial support among smokers, because support was inversely related to tobacco consumption, and 76% of the smokers in the sample were either occasional smokers or light daily smokers. The multivariate analyses indicated that opposition to tobacco control policies was

Table 3 Student support for recommended clean indoor air (smoke-free) policies: multivariate analysis

	Every building on campus		All parts of residence halls		Campus bars or pubs		Campus dining areas	
	AOR†	95% CI	AOR†	95% CI	AOR†	95% CI	AOR†	95% CI
<i>Student factors</i>								
Sex: female	1.27***	1.12 to 1.44	1.40***	1.25 to 1.57	1.31***	1.16 to 1.47	1.29***	1.14 to 1.46
Race: white	1.01	0.84 to 1.22	0.86	0.72 to 1.03	0.93	0.80 to 1.09	1.05	0.88 to 1.24
Ethnicity: Hispanic	1.06	0.79 to 1.41	0.70*	0.53 to 0.94	0.92	0.74 to 1.16	0.82	0.63 to 1.06
Married	1.51**	1.13 to 2.02	1.49**	1.15 to 1.93	1.37*	1.06 to 1.78	1.35*	1.04 to 1.74
Age <21 years	0.87	0.73 to 1.02	0.99	0.85 to 1.17	0.88	0.76 to 1.01	0.96	0.79 to 1.15
Grade: Freshman	1.00		1.00		1.00		1.00	
Sophomore	1.01	0.84 to 1.21	1.07	0.90 to 1.27	1.04	0.88 to 1.23	1.11	0.94 to 1.31
Junior	1.10	0.95 to 1.28	1.14	0.98 to 1.33	1.18*	1.01 to 1.38	1.26*	1.06 to 1.50
Senior	1.15	0.96 to 1.37	1.04	0.85 to 1.26	1.16	0.97 to 1.38	1.54***	1.28 to 1.86
Current cigarette smoker	0.16***	0.14 to 0.19	0.13***	0.11 to 0.15	0.12***	0.11 to 0.14	0.17***	0.15 to 0.20
Lives in dormitory	0.60***	0.52 to 0.70	0.72***	0.62 to 0.84	0.95	0.85 to 1.08	1.12	0.95 to 1.32
Residence halls smokefree‡	3.59***	2.98 to 4.33	4.78***	4.01 to 5.69	1.55***	1.34 to 1.79	1.32**	1.13 to 1.54
<i>Institutional factors</i>								
Size								
≤5000 students	1.00		1.00		1.00		1.00	
5001–10000 students	1.11	0.84 to 1.47	1.04	0.81 to 1.32	0.86	0.72 to 1.04	0.71**	0.57 to 0.89
>10000 students	1.14	0.85 to 1.54	1.12	0.86 to 1.44	0.96	0.79 to 1.18	0.73*	0.57 to 0.94
Region								
Northeast	1.00		1.00		1.00		1.00	
North central	1.63**	1.23 to 2.16	1.34*	1.06 to 1.69	1.30**	1.07 to 1.58	1.19	0.90 to 1.56
Southern	1.24	0.95 to 1.61	1.06	0.84 to 1.34	1.12	0.91 to 1.37	0.94	0.74 to 1.19
Western	2.27***	1.59 to 3.25	2.11***	1.56 to 2.85	3.07***	2.25 to 4.19	2.77***	1.95 to 3.93
Public college	1.08	0.82 to 1.41	1.13	0.90 to 1.43	1.00	0.81 to 1.23	0.96	0.75 to 1.22
School smoking prevalence								
1st tertile (≤22.8%)	1.28	1.00 to 1.63	1.30*	1.05 to 1.60	1.42**	1.15 to 1.75	1.49***	1.20 to 1.85
2nd tertile (>22.8–27.9%)	1.25	1.00 to 1.58	1.20	0.99 to 1.46	0.91	0.76 to 1.08	0.96	0.79 to 1.17
3rd tertile (≥28.0%)	1.00		1.00		1.00		1.00	

†Also adjusted for school response rate and degree of competitiveness for admission to school.

‡Respondent reports smoking is banned in college residences.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

AOR, adjusted odds ratio; CI, confidence interval.

concentrated in the small subgroup of heavy daily smokers who did not intend to quit. It is possible that the inverse relation between policy support and tobacco consumption may apply to populations beyond college students. If so, the finding would have special relevance for populations with few heavy smokers, such as young adults in general. In these populations, support for tobacco control policies may be higher than many policymakers assume if they use tobacco prevalence as a rough measure of opposition to tobacco control policies.

Multivariate analyses further demonstrated that support for proposed tobacco control policies was broad and strong in all sociodemographic groups and types of colleges. Some colleges have voiced concern that the adoption of a smoke-free policy in student residences might discourage prospective students who smoke from choosing to attend the school. Our data suggest otherwise. Even among smokers, 45% preferred a smoke-free dorm policy, and the majority of students who currently lived in a residence that permitted smoking stated a preference for a smoke-free residence. We did observe that students who lived in dormitories were less in favour of smoke-free residence policies than students who lived in off-campus housing. Students who do not live in dormitories may find it easy to favour a policy that does not affect them, while students who live in a dormitory may be more reluctant to impose rules on classmates.

Support for tobacco control policies of all types was stronger among students attending colleges with a low smoking prevalence. The relative absence of smokers on these campuses may foster positive attitudes toward proposed tobacco control policies. Support for all types of tobacco control policies was also stronger among students who reported that housing on their campus was already smoke-free. One interpretation is that students who live in smoke-free residences like them and may find it easier to support additional tobacco restrictions. Alternatively, colleges with smoke-free residences may attract

students with more support for tobacco control policies. Because this is a cross-sectional survey, it is impossible to distinguish between alternate interpretations of the finding.

Smoking bans in campus bars and prohibiting tobacco sales on campus were the least popular tobacco control policies. This may reflect the fact that both policies directly impact smokers. Smoke-free bar policies make it difficult for students to smoke in one of the last places where smoking has been allowed, while banning tobacco sales on campus makes access to tobacco products less convenient. In this context, smokers' strong support for bans on smoking in campus buildings, housing, and dining areas is remarkable. It probably reflects students' perception of social norms about where smoking is now acceptable in US society. It also reflects larger public opinion; state and community smoke-free bar laws face stronger opposition than do smoking bans for public places, worksites, and restaurants.

Proposed restrictions on tobacco marketing, which have little direct effect on students, had little opposition, even among smokers. Tobacco company sponsorship of campus events is a new tobacco industry strategy for recruiting young adult smokers.^{6–8} It occurs widely and students who attend these events have higher rates of tobacco use than students who do not.⁹ Our survey suggests that students will not oppose efforts to stop these promotional activities.

The prevalence of smoke-free dormitory policies in 2001 in our sample (44%) was substantially higher than the 27% prevalence observed in 1999 in a larger national sample of US colleges.³ This apparent discrepancy probably represents an increase in smoke-free policy adoption between 1999 and 2001. A survey of 50 US public universities conducted in 2001 found a doubling in the prevalence of smoke-free dormitories between 1999 and 2001.¹³

The results of this study are subject to several limitations. The survey response rate of 52% raises the potential for selection bias. However, the sociodemographic characteristics of

Table 4 Student support for recommended policies prohibiting tobacco marketing and sales: multivariate analysis

	Advertisements for tobacco products		Events sponsored by tobacco companies		Sale of tobacco products on campus	
	AOR†	95% CI	AOR†	95% CI	AOR†	95% CI
<i>Student factors</i>						
Sex: female	1.35***	1.21 to 1.51	1.55***	1.39 to 1.72	1.42***	1.28 to 1.58
Race: white	0.72***	0.62 to 0.84	0.83*	0.72 to 0.96	0.78**	0.66 to 0.93
Ethnicity: Hispanic	0.85	0.68 to 1.05	0.84	0.68 to 1.03	0.94	0.75 to 1.18
Married	1.62**	1.22 to 2.15	1.99***	1.50 to 2.65	1.61**	1.22 to 2.13
Age <21 years	0.91	0.78 to 1.06	0.95	0.82 to 1.10	0.84*	0.73 to 0.97
Grade: Freshman	1.00		1.00		1.00	
Sophomore	1.06	0.92 to 1.21	1.12	0.96 to 1.30	1.02	0.88 to 1.19
Junior	1.08	0.94 to 1.23	1.14	1.00 to 1.31	1.04	0.90 to 1.20
Senior	1.14	0.95 to 1.37	1.15	0.95 to 1.40	0.91	0.75 to 1.11
Current cigarette smoker	0.36***	0.32 to 0.41	0.31***	0.27 to 0.35	0.17***	0.15 to 0.19
Lives in dormitory	0.93	0.82 to 1.06	0.99	0.87 to 1.13	0.94	0.84 to 1.06
Residence bans smoking	1.23**	1.09 to 1.39	1.29***	1.14 to 1.45	1.35***	1.15 to 1.58
<i>Institutional factors</i>						
<i>Size</i>						
≤5000 students	1.00		1.00		1.00	
5001–10000 students	0.86	0.72 to 1.02	0.84*	0.73 to 0.97	0.92	0.70 to 1.20
>10000 students	0.79*	0.66 to 0.96	0.79*	0.66 to 0.95	0.72*	0.55 to 0.95
<i>Region</i>						
Northeast	1.00		1.00		1.00	
North central	1.12	0.93 to 1.36	1.05	0.89 to 1.24	1.31*	1.01 to 1.70
Southern	0.97	0.81 to 1.15	0.71***	0.60 to 0.84	1.16	0.91 to 1.49
Western	1.70***	1.32 to 2.19	1.31*	1.03 to 1.67	1.70**	1.21 to 2.37
Public college	0.81	0.65 to 1.01	1.00	0.80 to 1.25	0.84	0.60 to 1.19
<i>School smoking prevalence</i>						
1st tertile (≤22.8%)	1.32***	1.14 to 1.54	1.33**	1.13 to 1.57	1.60***	1.27 to 2.02
2nd tertile (>22.8–27.9%)	1.03	0.88 to 1.21	1.03	0.91 to 1.18	1.16	0.93 to 1.44
3rd tertile (≥28.0%)	1.00		1.00		1.00	

†Also adjusted for school response rate and degree of competitiveness for admission to school.
 ‡Respondent reports smoking is banned in college residences halls.
 *p<0.05; **p<0.01; ***p<0.001.

the sample resembled those of a national sample, and response rates did not correlate with smoking prevalence or differ between schools with and without smoke-free policies. These facts suggest that selection bias is not a large concern. Second, our results are generalisable to students enrolled in US four-year colleges and universities but cannot be assumed to represent the opinions of students attending two-year colleges. Nonetheless, the results do apply to a large number of young adults—an estimated 5.3 million young adults attend four-year colleges.² Finally, because of survey length limitations, we did not assess all proposed campus tobacco control policies. We did not solicit student opinions of bans on smoking outside building entrances or at all campus events, about the provision of free smoking cessation treatment, or on free distribution of tobacco products on campus.

In summary, this study elicited student opinions about a range of policies and derived data from a large, random sam-

ple of students at a nationally representative sample of US colleges. These data provide strong support for tobacco control policymakers, advocates, and college administrators who are considering whether to adopt policies to discourage tobacco use among college students. Policy strategies are important for the college population because of their broad reach. They can discourage both the uptake and continuation of tobacco use and they have the potential to affect a much larger number of students than traditional smoking cessation interventions in this setting. Future research should include surveillance of the prevalence of college tobacco control policies, identification of factors that facilitate and impede policy adoption, and evaluation of the impact of specific tobacco control policies on tobacco use prevalence. In the meantime, this study provides support for adopting college tobacco control policies, which should be a high priority for college administrators, public health policymakers, and practitioners.

ACKNOWLEDGEMENTS

Supported by grants from the Robert Wood Johnson Foundation, the Flight Attendant Medical Research Institute, and a Midcareer Investigator Award in Patient-Oriented Research from the National Heart Lung and Blood Institute (K24-HL04440).

Authors' affiliations

*N A Rigotti, S Regan, S E Moran, Tobacco Research and Treatment Center and Division of General Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA
 H Wechsler, Department of Health and Social Behavior, Harvard School of Public Health

*Also Department of Health and Social Behavior, Harvard School of Public Health

REFERENCES

1 Cigarette smoking among adults – United States, 2000. *MMWR Morb Mortal Wkly Rep* 2002;51:642–5.

What this paper adds

Tobacco use among young adults in the USA rose through the 1990s. One third of US young adults attend college, making these institutions important channels for discouraging tobacco use. The American College Health Association and American Cancer Society have independently recommended a similar set of tobacco control policies for college campuses. Student opinion of these policies is not known, and concern about student opposition deters some administrators from adopting the policies.

This survey of a large random sample of US college students found strong support for the proposed college tobacco control policies, even among smokers. These findings should provide reassurance to college administrators who are considering adopting the policies.

- 2 **Hingson RW**, Heeren T, Zakocs RC, *et al*. Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24. *J Stud Alcohol* 2002;**63**:136-44.
- 3 **Wechsler H**, Rigotti NA, Gledhill-Hoyt J, *et al*. Increased levels of cigarette use among college students: a cause for national concern. *JAMA* 1998;**280**:1673-8.
- 4 **Rigotti NA**, Lee JE, Wechsler H. U.S. college students' use tobacco products: results of a national survey. *JAMA* 2000;**284**:699-705.
- 5 **Wechsler H**, Kelley KT, Seibring M, *et al*. College smoking policies and smoking cessation programs: a survey of college health center directors. *J Am Coll Health* 2001;**49**:205-12.
- 6 **Sepe E**, Ling P, Glantz SA. Smooth moves: bar and nightclub tobacco promotions that target young adults. *Am J Public Health* 2002;**92**:414-19.
- 7 **Katz SK**, Lavack AM. Tobacco related bar promotions: insights from tobacco industry documents. *Tobacco Control* 2002;**11**(suppl 1):i92-101.
- 8 **Ling PM**, Glantz SA. Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents. *Am J Public Health* 2002;**92**:908-16.
- 9 **Rigotti NA**, Moran SE, Wechsler H. U.S. college students' exposure to tobacco industry promotions at bars, clubs, and campus social events: prevalence and relationship to tobacco use [abstract]. Presented at the Annual Meeting, Society for Research in Nicotine and Tobacco, New Orleans, Louisiana, 20 February 2003.
- 10 **American Cancer Society**. Mission statement: American Cancer Society's smoke-free New England, in advocating for a tobacco free campus: a manual for college and university students. Boston: American Cancer Society, New England Division, 2001. Accessed 25 July 2002. http://www.cancer.org/downloads/COM/Advocating_For_A_Tobacco-Free_Campus.pdf
- 11 **American College Health Association**. Position statement on tobacco on college and university campuses. June 2000. Accessed 25 July 2002. <http://www.acha.org/inforesources/tobaccostatement.pdf>
- 12 **Wechsler H**, Lee JE, Rigotti, NA. Cigarette use by college students in smoke-free housing: results of a national study. *Am J Prev Med* 2001;**20**:202-7.
- 13 **Halperin A**, Rigotti NA. U.S. public universities' compliance with recommended tobacco control policies. *J Am Coll Health* 2003;**51**:181-8.
- 14 **Halperin A**, Ehlinger E, Majchrzak N. Reducing tobacco use among college students by changing campus policies and practices. Presented at the National Conference on Tobacco or Health, New Orleans, Louisiana, November 2001.
- 15 **Majchrzak N**, Park E, Rigotti N. Tobacco use by Massachusetts college students: a qualitative study. Presented at the Annual Meeting, Society for Research in Nicotine and Tobacco, Savannah, Georgia, February 2002.
- 16 **Wechsler H**, Lee JE, Kuo M, *et al*. Trends in college binge drinking during a period of increased prevention efforts. Findings from 4 Harvard School of Public Health College Alcohol Study surveys: 1993-2001. *J Am Coll Health* 2002;**50**:203-17.
- 17 **Wechsler H**, Davenport A, Dowdall G, *et al*. Health and behavioral consequences of binge drinking in college: a national survey of students at 140 campuses. *JAMA* 1994;**272**:1672-7.
- 18 **U.S. Department of Education, National Center for Education Statistics**. Fall enrollment in Title IV degree-granting postsecondary institutions, 1998. NCES 2002-162. Accessed 28 August 2002. <http://nces.ed.gov/pubs2002/2002162.pdf>.
- 19 **StataCorp**. 2001. *Stata statistical software: release 7.0*. College Station, Texas: Stata Corporation.
- 20 **Zeger SL**, Liang KY, Albert PS. Models for longitudinal data: a generalized estimating equation approach. *Biometrics* 1988;**44**:1049-60.
- 21 **Liang KY**, Zeger SL. Longitudinal data analysis using generalized linear models. *Biometrics* 1992;**73**:12-22.

WORLD WIDE WEB

www.treatobacco.net

The Society for Research in Nicotine and Tobacco (SRNT) and World Health Organization (WHO), in a collaborative initiative between public and private organisations, have created a free internet based resource, www.treatobacco.net, for those working on the treatment of tobacco dependence. This innovative project was started with a grant from three pharmaceutical companies, GlaxoSmithKline, Novartis, and Pharmacia. Support has also been received from the American Cancer Society, National Cancer Institute (US), and National Institute on Drug Abuse (US), but support over the last year has come mainly from the Robert Wood Johnson Foundation.

www.treatobacco.net presents evidence based information about the treatment of tobacco dependence, under five headings: efficacy, safety, health, economics, policy, epidemiology, and demographics and health effects. Each of these sections is chaired by an expert with a small supporting team, the chairs being, respectively: Lindsay Stead, Neal Benowitz, Trevor Woollery, Ann McNeill, and Corinne Husten. All information on the website is reviewed by an independent editorial board chaired by Ron Davis, once head of the Office on Smoking and Health in the USA and past editor of *Tobacco Control*.

The evidence is collated and reviewed by over 40 international experts and is periodically updated to incorporate new research. Commentaries and supporting references accompany key findings, with links to original sources for easy reference. Referenced power point slide kits summarising this evidence can be downloaded from the site. It will be invaluable to clinicians, researchers, teachers and policy makers, and is currently available, free, in 10 languages: English, Chinese, French, German, Italian, Japanese, Portuguese, Russian, and Spanish. Arabic is being added now.

M Raw

martin@rawdata.demon.co.uk