

School Tobacco Policies in a Tobacco-Growing State

Ellen J. Hahn, Mary Kay Rayens, Rob Rasnake, Nancy York,
Chizimuzo T.C. Okoli, Carol A. Riker

ABSTRACT: *This study examined factors associated with tobacco-free policies and tobacco cessation in schools serving children in grades 6 to 12 in a tobacco-growing state using a cross-sectional telephone survey of school administrators from public and private middle and high schools (N = 691), representing 117 of the 120 Kentucky counties. Trained health department staff contacted 1028 schools; 691 (67%) participated in a phone survey, which lasted an average of 19 minutes. Variables of interest were indoor and outdoor smoking policies, fund-raising in Bingo halls, provision of cessation and prevention programs, owning or leasing a tobacco base, if the school received money from tobacco companies, type of school (public vs private), and school setting (urban vs rural). Only 20% of Kentucky schools reported comprehensive tobacco-free policies. Urban area schools were nearly twice as likely to have a tobacco-free campus than rural schools. Schools that did fund-raising in smoky Bingo halls were 30% less likely to have tobacco-free school policies. While few schools had a tobacco affiliation, those that received money from tobacco companies or grew tobacco were nearly 3 times as likely to provide cessation resources, compared to schools without tobacco affiliation. Rural schools were less likely to be tobacco free and provide cessation services. School-related, off-campus, extracurricular events might be considered as an element of tobacco-free school policy. Schools with tobacco affiliation may provide more cessation resources due to the increased prevalence of tobacco use in these areas. (J Sch Health. 2005;75(6):219-225)*

The prevalence of youth smoking, while showing a downward trend, still bodes poorly for the future health of Americans. According to the 2002 Youth Tobacco Survey, 11% of US middle school students and 28% of high school students smoked cigarettes in the past 30 days.¹ Smoking is established early and is a difficult addiction to break. Young people overrate their ability to quit.² In fact, symptoms of tobacco dependence develop rapidly even after the onset of intermittent smoking, eg, 2 cigarettes, 1 day per week.³ Despite the fact that only 5% of high school daily smokers predicted they would be smoking in 5 years, three quarters of those in the Monitoring the Future Study were daily smokers 7 to 9 years later.² If current teenage smoking behaviors continue, an estimated 6.4 million of today's children will die prematurely from a smoking-related disease.⁴

The development, implementation, and strong enforcement of tobacco-free policies in schools may result in lower rates of smoking among adolescents.⁵⁻⁷ Smoke-free policies may not only facilitate prevention efforts but also contribute to improved cessation rates. The report of the 1999-2000 Statewide Tobacco Control Program in Oregon concluded that school-based programs including smoke-

free policies and community involvement as part of a state-wide program may contribute to cessation efforts in eighth-grade smokers.⁸ Hamilton et al⁹ found lower smoking rates at schools that used education or counseling along with disciplinary sanctions for violators than schools using only disciplinary measures. Peck et al¹⁰ suggested that schools' efforts to eliminate tobacco use by adolescents are more effective when health education is combined with school policies and adult role models convey the message that tobacco use is unhealthy and unacceptable. Not only is it critical to consider tobacco-free policies in the school building but it is also important to provide protection from secondhand smoke exposure for children and their families during extracurricular, school-related fund-raising activities such as Bingo. Tobacco-free school policies designed, implemented, and evaluated to support students and faculty in the process of improving health-related outcomes may be most beneficial to facilitate positive behavioral change.¹¹

Little empirical data document the predictors of enactment and/or enforcement of school antismoking policies. School policies vary from state to state, with stronger state antismoking laws supporting successful implementation of local school antismoking policies.¹² Tencati et al¹³ found that high school students already engaged in advocacy related to alcohol, tobacco, and other drugs produced policy-level changes in their schools and communities. North Carolina school districts that passed 100% tobacco-free policies typically harvested less tobacco than districts that did not pass such policies.¹⁴ Counties with significant tobacco production required additional resources and strategies to enact tougher school policies. In regard to the potential impact of tobacco industry corporate influence on schools, Rosenberg and Siegel¹⁵ found that "tobacco corporate sponsorship involved small, community-based organizations, both through direct funding and through grants to larger umbrella organizations."

Ellen J. Hahn, DNS, RN, Professor, (ejhahn00@email.uky.edu), University of Kentucky College of Nursing and College of Public Health, 760 Rose St, Lexington, KY 40536-0232; Mary Kay Rayens, PhD, Associate Professor, (mkrayens@uky.edu), University of Kentucky Colleges of Nursing, Medicine, and Public Health, Lexington, KY 40536-0232; Rob Rasnake, MA, LPCC, NCC, Data Management Coordinator, (robrasnake@hotmail.com), Kentucky Tobacco Policy Research Program; Nancy York, MSN, RN, PhD, Student and Research Assistant, (lyork2@uky.edu); Chizimuzo T.C. Okoli, MSN, RN, PhD, Candidate and Research Assistant, (ctokol1@uky.edu); and Carol A. Riker, MSN, RN, Associate Professor, (riker@uky.edu), University of Kentucky College of Nursing, Lexington, KY 40536-0232. This study was funded through a contract with the Kentucky Cabinet for Health and Family Services.

This study examined factors associated with tobacco-free policies and tobacco cessation in schools serving children in grades 6 to 12 in a tobacco-growing state. The specific aim was to determine whether school characteristics such as type, location, Bingo as a fund-raiser, and tobacco affiliation predict the presence of a tobacco-free campus policy and the provision of cessation or prevention services.

METHODS

Design

A cross-sectional telephone survey was conducted with principals or assistant principals from public and private middle and high schools, representing 117 of the 120 Kentucky counties. Phone interviews lasted an average of 19 minutes. Data were collected on indoor and outdoor smoking policies, fund-raising in Bingo halls, provision of cessation and prevention programs, owning or leasing a tobacco base, if the school received money from tobacco companies, type of school (public vs private), and school setting (urban vs rural). Counties were designated as urban or rural according to the Metropolitan Statistical Area in which they were located, based on the US Department of Health and Human Services Office of Rural Health Policy.

Sample

A list of all public and private middle and high schools was obtained from the Kentucky Department of Education. Trained staff contacted all 1028 schools; 691 (67%) agreed to participate in the phone survey. More than two thirds (65%) of respondents were principals or assistant principals. Schools in the analysis were located in 117 Kentucky counties throughout the state, including the 6 urban centers (20 counties) and 97 rural counties. These counties comprise a total population of almost 4 million, representing approximately 97% of the state's population.

Measures

The school tobacco policy interview guide was developed based on a comprehensive review of the literature and other school surveys.¹⁶ The final version of the 56-item instrument included questions about the school's written indoor and outdoor smoking policies, policies related to smokeless tobacco, provision of prevention and cessation programs, school fund-raising in Bingo halls that allowed smoking, if schools owned or leased a tobacco base, and if schools received money from tobacco companies. Most items had nominal response options (eg, yes/no); the remaining questions were ordinal (eg, "all of the time" to "never").

A tobacco affiliation variable was created using 2 measures: whether or not they received money from tobacco companies and whether or not the school grew or leased a tobacco allotment. If a school official indicated that the school received money from tobacco companies or grew or leased a tobacco allotment, the school was scored as a "yes;" other schools were scored as "no."

Procedure

Tobacco prevention coordinators employed by the local health departments and research staff members at the University of Kentucky were trained to conduct the interviews using a standard interview protocol. Training

included the purpose and methods of the study, how the information would be used, effective telephone interview techniques, and human subjects protection. If a participant was unsure of the answer, the interviewer asked for the name of someone who might know the information and that person was contacted. Data were entered and managed using Teleform software (Cardiff Teleform Elite, Version 8.2 acquired by Verity, March 16, 2004, Sunnyvale, CA); approximately 48% of the interviews were faxed into the system, and about 52% were entered online. Tobacco prevention coordinators followed up with schools that indicated an interest in assistance by making personal visits or sending tobacco-free school policy information.

Descriptive statistics were used to summarize the types of school tobacco policies and resources for cessation programs. Chi-square analysis was used to examine the associations between school tobacco policies and cessation resources provided by schools. Chi-square analysis also was used to determine if smoking policies and cessation resources provided by schools differed according to whether or not the schools were private, urban, used Bingo for fund-raising, and had a tobacco affiliation. A series of multiple logistic regression models were developed to determine which of the 4 school characteristics (private/public, urban/rural, use of Bingo for fund-raising, and tobacco affiliation) predicted the probability of the presence of a tobacco-free campus policy and the provision of cessation or tobacco-use prevention services by the school. All 3 dependent variables were dichotomous and scored so that the models predicted the likelihood of a "yes" response. Variables included in each model as potential predictors were those demonstrating a significant bivariate association with the dependent variable. Logistic models were examined for multicollinearity by determining the variance inflation factors for each predictor. The goodness of fit of each logistic model was assessed using the Hosmer-Lemeshow test. Data analysis was performed using SAS for Windows (SAS Institute, Inc., Cary, NC); alpha level of .05 was used.

RESULTS

Of the 691 schools, most (68%) were in rural areas and most (83%) were public. Nine percent indicated that they used Bingo for school fund-raising and 8% had a tobacco affiliation, either by growing or leasing a tobacco allotment or receiving money from tobacco companies.

Smoking at School and Tobacco-Free Policies

Virtually all respondents (99%) indicated that their school had a policy banning indoor smoking. Nearly all schools with an indoor ban reported the policy applied to students, teachers, staff, and visitors. While 97% of schools prohibited students from smoking on school grounds, only 42% indicated smoke-free school grounds for employees. Nearly all schools (93%) prohibited smoking at indoor school-related events after school hours, but less than one-half (44%) banned smoking at outdoor events after school hours. Nearly all respondents (96%) indicated that students complied with existing smoking policies "most of the time" or "all of the time." Only 20% of respondents indicated that their school had a totally tobacco-free campus: smoke- and smokeless free

during and after school, both indoors and out, for students, faculty, staff, and visitors.

Cessation and Prevention Resources

Twenty-eight percent of the schools provided direct smoking cessation services to students and/or employees. Of the 188 schools that offered cessation, the most commonly used programs were Tobacco Education Group (TEG)¹⁷ and Tobacco Assistance Program (TAP)¹⁸ (Figure 1). Schools taught cessation classes either once a semester or a session (23%), once a year (11%), every 12 weeks (6%), or on some other time frame (60%), most typically “on demand” or “as needed.”

Nearly three quarters of the schools (73%) provided at least 1 research-based prevention curriculum from among the 17 programs included in the questionnaire. In schools with at least 1 research-based curriculum, the most prevalent programs used were the Life Skills Training Program^{19,20} (45%), the new version of Drug Abuse Resistance Education (DARE) (39%), and Here’s Looking at You 2000²¹ (14%).

Tobacco-Free Schools and Cessation/Prevention Resources, Bingo Fund-Raising, Tobacco Affiliation, and School Characteristics

Schools with tobacco-free campuses were more likely to provide smoking cessation resources to students or employees (39% vs 25%; $\chi^2 = 10.8$, $df = 1$, $p = .001$). No association existed between tobacco-free campus policy and if the school offered at least 1 research-based prevention curriculum. Of the tobacco-free schools, 4% participated in fund-raising in Bingo halls that allowed smoking,

compared with 10% of schools that were not tobacco free ($\chi^2 = 5.5$, $df = 1$, $p = .02$). Urban schools were more likely to have a tobacco-free campus than rural schools (26% vs 17%; $\chi^2 = 7.0$, $df = 1$, $p = .008$). A tobacco-free campus policy was not related to whether the school was private/public or whether the school had an affiliation with tobacco.

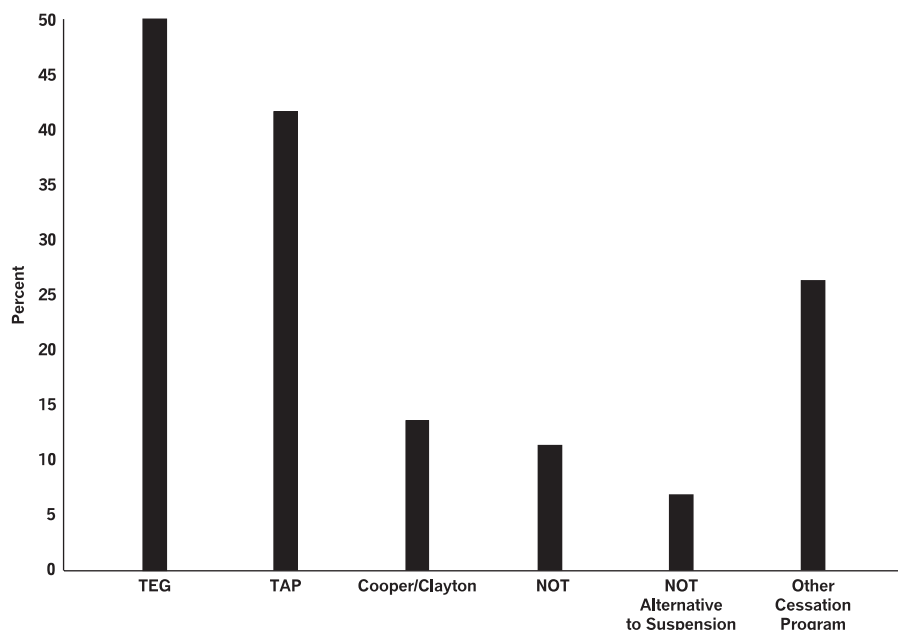
Cessation and Prevention Services and Bingo, Tobacco Affiliation, and School Characteristics

No association existed between whether schools offered cessation resources and had at least 1 research-based prevention curriculum. Offering cessation services was significantly related to type of school, with 31% of public schools offering cessation, compared with only 12% of private schools ($\chi^2 = 16.4$, $df = 1$, $p < .0001$). Similarly, public schools were more likely than private schools (75% vs 60%) to provide research-based prevention curricula ($\chi^2 = 10.1$, $df = 1$, $p = .002$). One third of urban schools provided cessation services, compared with 26% of rural schools ($\chi^2 = 3.8$, $df = 1$, $p = .05$); no relationship existed between prevention resources and urban/rural status. Schools with a tobacco affiliation were more likely than those without to provide cessation (49% vs 26%; $\chi^2 = 11.4$, $df = 1$, $p = .0007$) and prevention curricula (86% vs 72%; $\chi^2 = 4.5$, $df = 1$, $p = .03$). No association existed between the provision of cessation or prevention services and the use of smoky Bingo halls for fund-raising.

School Characteristics Associated With Bingo and Tobacco Affiliation

Tobacco affiliation was related to type of school, with 8% of public schools ($\chi^2 = 5.3$, $df = 1$, $p = .02$) having

Figure 1
Percent of Schools Offering Different Types of Cessation Programs (n = 188)



a tobacco affiliation, compared with 2% of private schools. Type of school also was significantly associated with Bingo fund-raising (26% of private schools vs 6% of public schools; $\chi^2 = 45.7$, $df = 1$, $p < .0001$). While the urban/rural distinction was not related to tobacco affiliation, urban schools were more likely to raise funds using Bingo, compared with rural schools (14% vs 6%; $\chi^2 = 10.6$, $df = 1$, $p = .001$). Schools with a tobacco affiliation also were more likely to participate in fund-raising in Bingo halls that allowed smoking than those without an affiliation (18% vs 8%; $\chi^2 = 5.6$, $df = 1$, $p = .02$).

Predictors of Tobacco-Free School Policy, Cessation Services, and Tobacco Prevention

Both urban status and fund-raising in Bingo halls that allowed smoking were significant predictors of a tobacco-free campus policy (Table 1). Urban schools were nearly twice as likely to have a tobacco-free campus than rural schools. Schools that did fund-raising in Bingo halls that allowed smoking were 30% less likely to ban all forms of tobacco at all times on school grounds. Type of school, setting, and tobacco affiliation were all significant predictors of the provision of cessation services. Private schools were 20% less likely to provide cessation services, compared to public schools. Those in urban areas were nearly 2 times more likely to provide cessation services than schools in rural areas. Schools that received money from tobacco companies either directly or through allotment ownership were nearly 3 times as likely to provide cessation resources to their students or employees, compared to schools without tobacco affiliation. While both school type and tobacco affiliation were associated with whether the school provided prevention education to their students, only the former was a significant predictor of prevention education. Private schools were approximately half as likely as public schools to provide this type of education. The variance inflation factors for these 4 variables together in a regression were all less than 1.2, indicating that multicollinearity did not affect the models. All 3 logistic models demonstrated a nonsignificant Hosmer-Lemeshow test statistic, indicating that the model fit the data well in each case.

DISCUSSION

Although nearly all schools in this study prohibited smoking on school grounds for students, less than one-half prohibited employee smoking on campus, and only 1 in 5 had comprehensive tobacco-free campus policies. When students see adults using tobacco on campus, youth smoking increases.^{22,23} The fact that more than one half of schools allowed employee smoking on campus may actually promote tobacco-use behaviors among students. Students who feel surrounded by the use of tobacco products at school are more likely to accept tobacco use.²⁴ The Pro-Children Act of 1994 requires that all federally funded schools maintain an indoor smoke-free environment.²⁵ The Healthy People 2010 initiative expands this directive and recommends an entirely tobacco-free school campus including prohibiting all forms of tobacco use by students, faculty, and staff, and prohibiting use at all school-related facilities and sponsored events. While states report compliance with having some form of policy prohibiting tobacco use by students, barely two-thirds possess policies consistent with Healthy People 2010 objectives.²⁶ Most often, schools do not enact policies prohibiting smoking by staff or faculty or at off-campus, school-sponsored events,²⁷ as was the case in this study.

Private schools were just as likely as public schools to report tobacco-free campus policies, while schools in urban areas were more likely to have tobacco-free campus policies than rural schools. Since effective policy change should be consistent with other aspects of the setting and environment,²⁸ developing and implementing comprehensive tobacco-free school policies in rural areas may prove challenging in places like Kentucky. The state is second only to North Carolina in burley tobacco production²⁹ and leads the nation in tobacco use.³⁰ Because Kentucky's agricultural economy has traditionally been less diversified than that of other major tobacco states, its economic and cultural dependence on tobacco has the potential to significantly influence public policy,³¹ especially in rural areas that grow tobacco. It was interesting that private schools were just as likely as public schools to report tobacco-free campus policies.

Table 1
Logistic Regression Analysis for Each School Tobacco Policy Outcome

Outcome	n	Predictor	Odds Ratio (OR)	95% Confidence Interval for OR
Tobacco-free campus (yes/no)	679	Urban	1.8**	1.2-2.7
		Bingo as fund-raiser	0.3*	0.1-0.8
Cessation resources (yes/no)	587	Private	0.2***	0.1-0.4
		Urban	1.9**	1.3-2.9
		Tobacco affiliation	2.7**	1.4-5.1
Prevention classes (yes/no)	597	Private	0.6*	0.4-0.9
		Tobacco affiliation	2.0	0.8-4.5

* $p < .05$; ** $p < .005$; *** $p < .0001$.

Schools that engaged in fund-raising in Bingo halls that allowed smoking were less likely to have tobacco-free campus policies. Further, private schools were more likely than public schools to report holding fund-raising activities in smoke-filled Bingo halls; urban schools were more likely than rural schools to report this. Schools that adopt comprehensive tobacco-free campus policies may be more aware of the risk imposed on students and their families from exposure to secondhand smoke as they work in Bingo halls to raise funds for band activities and sports teams. Since most extracurricular school activities require that students and families contribute to some sort of fund-raising, it is important that they are afforded protections from the harms of exposure to secondhand smoke. However, school tobacco policies often do not extend to off-campus events like Bingo. In addition, fund-raising is often conducted by booster clubs that operate under their own bylaws and are independent of school policy. We recommend that comprehensive tobacco-free school policies include consideration of off-campus events and that school-related fund-raising be viewed as an element of school policy. Further, it is important to target private schools and those in urban areas with education about the risk of secondhand smoke exposure during fund-raising in Bingo halls, as well as assistance with the development of comprehensive tobacco-free school policy. Community programs involving parents, mass media, and community organizations will enhance these efforts³² as will strong restrictions on smoking in public places.⁵

The finding that less than 30% of schools provided direct smoking cessation services is consistent with the Community Intervention Trial for Smoking Cessation (COMMIT) study, which found that less than 20% of US schools offered cessation classes to students and employees.²⁸ While few schools helped students and employees quit smoking, most schools (75%) provided at least 1 research-based curriculum to prevent alcohol, tobacco, and other drug use. While exposure to school prevention programs can decrease susceptibility to smoking,³³ delaying cessation efforts past the school-age years has negative health ramifications during both adolescence and adulthood. Without cessation interventions, very few adolescent smokers stop smoking.³⁴ School-based curricula alone are ineffective in preventing initiation and need to be provided in conjunction with comprehensive tobacco-free policies and media interventions for improved efficacy.³⁵ The findings of this study show that schools with tobacco-free campuses were more likely to provide cessation services than those without tobacco-free campuses. Given that provision of cessation services is one important element of comprehensive tobacco-free school policy,³⁶ this finding was not surprising.

The fact that public schools and those in urban areas were more likely to provide cessation resources presents an opportunity to target private schools and those in rural areas with information about evidence-based cessation programs. It would be important to analyze how students caught smoking in school are sanctioned and if there are alternatives to suspension in place. Programs such as TEG/TAP^{17,18} or Not-On-Tobacco (NOT)^{37,38} can be used during or after school to provide both mandatory education and voluntary cessation with students who violate the smoking policy, and staff can be trained to deliver brief interventions soon after the violation occurs.³⁹ Private schools

were less likely than public schools to provide prevention education and could benefit from information about evidence-based alcohol, tobacco, and other drug prevention curricula.

Interestingly, schools with tobacco affiliation were more likely to provide prevention classes and cessation resources to their students and employees, compared to schools without a tobacco affiliation. Noland and colleagues found that tobacco use was significantly higher among teens from tobacco-growing families than teens from families who did not grow tobacco.⁴⁰ Tobacco use among teens living in tobacco-growing areas increases as the degree of personal involvement in raising tobacco increases.⁴¹ Students in schools with tobacco affiliation may live in areas where tobacco cultivation is the norm and as a result have the potential for increased tobacco use. Thus, schools with tobacco affiliation may provide more prevention and cessation resources due to the increased prevalence of tobacco use in these areas. Kentucky youth fare worse than the rest of the nation, with 22% of middle school and 37% of high school students reporting smoking.⁴² Even more ominous is the fact that 15% of Kentucky high school students report smoking their first cigarette before age 11 years.

The fact that tobacco-affiliated schools were more likely to use smoke-filled Bingo halls as a fund-raising location may be another indication of the pro-tobacco norm, or these schools may not recognize the risk of secondhand smoke exposure to students and their families. However, schools with tobacco affiliation were just as likely as schools with no affiliation to have tobacco-free campuses. As with the provision of cessation services, this finding could be due to the fact that high tobacco prevalence may necessitate a need for stronger policies.

Limitations

Although the response rate was relatively high, and the schools approached to participate included nearly all those in the state, there were some missing data, particularly for the items pertaining to tobacco affiliation. As a result, approximately 100 schools in the study were not included in the logistic models that contained this variable as a potential predictor.

IMPLICATIONS AND FURTHER RESEARCH

Schools have an opportunity to prevent the lifelong health risk posed by youth tobacco use. The first step is to adopt a comprehensive tobacco-free policy that prohibits all forms of tobacco use both during and after school and at all school-related events (including extracurricular fund-raising activities), and provides evidence-based cessation services and prevention programs for students and employees. Further, without adequate enforcement of these policies, they fall short of protecting children. Enforcement must include education and counseling for violators, be tailored to the needs of staff, and receive a high level of institutional and interpersonal support.¹¹

Evidence from this study and others indicates that schools have a long way to go to protect and assist students who experiment with tobacco and students already addicted to tobacco products. These findings reveal that schools in tobacco-growing states face even greater challenges, given the pro-tobacco norm. Since rural schools

were less likely to have tobacco-free school policies, there is a tremendous need to provide technical assistance on evidence-based policy development. Further research must determine the nature of the influence of tobacco company contributions to schools as well as the impact of tobacco growing on school property on tobacco-use prevalence. While the incidence of using smoke-filled Bingo halls as a fund-raising location was relatively low in this sample of Kentucky schools, further research is needed to understand the impact this activity has on the health of both students and their families. Since there is no research on relating Bingo as a school fund-raiser to secondhand smoke exposure, it would be important to conduct studies with private schools and those in urban areas since they were most likely to engage in these activities. As this study did not address enforcement issues, further research is needed to determine the predictors of strong enforcement of tobacco-free policies.

Tobacco use remains the single most preventable cause of death in the United States. Since youth spend a good portion of their day in school-related activities, schools are in a position to play an important role in countering protobacco messages and reducing the health and economic burden from tobacco use. ■

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