

Support for Tobacco Control Policies among Youth in North Carolina

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Abstract

Background: The objective of this research was to examine attitudes toward tobacco control policies among middle and high school students in North Carolina. Specifically, we report data on knowledge of the harmfulness of secondhand smoke and support for restaurant and school-based smoking restrictions.

Methods: The statewide North Carolina Youth Tobacco Survey was administered to a representative sample of 3,073 middle school and 3,261 high school students in the fall of 2003. The overall response rate for the middle and high school samples was 77.0% and 77.4%, respectively. Support for tobacco policies was analyzed by smoking status and by knowledge of the harmfulness of secondhand smoke

Results: The vast majority of respondents in the middle school (87.6%) and high school (91.6%) reported that secondhand smoke was "definitely" or "probably" harmful. However, less than half of middle school (48.6%) and high school (40.2%) students responded that smoking should be banned in restaurants. Even among the select group of students who had never smoked and who believed secondhand smoke was harmful, support for such a ban was less than 60% at both school levels.

Conclusions: Youth in North Carolina are aware of the health risks of secondhand smoke, but are not convinced of the need to restrict smoking in restaurants. These results point to the need for more youth-focused advocacy and education around smoking restrictions, both to reduce youth exposure to secondhand smoke and to solidify voter support for such protections once they reach adulthood.

Key words: youth, tobacco control, smoking restrictions.

Introduction

Over the past 20 years, exposure to secondhand smoke (SHS) has been associated with an increased risk of lung cancer, heart disease, and respiratory ailments in non-smokers and has been estimated to cause approximately 3,000 lung cancer deaths and 35,000 heart disease deaths in adult non-smokers in the United States each year.^{1,2} In addition, SHS has been associated with adverse infant outcomes, such as low birth weight and Sudden Infant Death Syndrome, as well as childhood asthma and middle ear infections.³ As awareness of the health risks of SHS has increased, so has support for policies that restrict smoking in public places such as restaurants, where SHS levels have been found to be two-to-five times higher than levels in the homes of smokers.⁴ From 1992 to 1999, support for smoking

bans in restaurants increased from 37.5% to 59.8% among adults in Massachusetts.⁵ Unfortunately, not all states show majority support for such bans. A recent report compared the results of 20 statewide surveys on attitudes toward tobacco control policies in 2000.⁶ In four of those states, less than half of the respondents favored policies to ban smoking in restaurants; support was lowest in North Carolina (44%), the largest tobacco producing state in the country.

As opposed to most adults, today's adolescents are growing up in an era when the risks of SHS are well established and smoking restrictions are not uncommon. Even in North Carolina, local smoking regulations were hotly debated and adopted in more than 100 municipalities/counties before a statewide preemption bill went into effect in 1993.⁷ In addition, North Carolina has an active tobacco education and prevention

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program in the schools, and more than 80% of middle and high school students responded that SHS was harmful to non-smokers in a 1999 survey.⁸ However, it is unclear whether that knowledge translates into stronger support for smoking restrictions among adolescents and whether they might be expected to solidify public support as they come into adulthood.

To our knowledge, few studies have examined attitudes toward tobacco control policies among youth,⁹⁻¹² and only two have examined support for smoking bans in restaurants. Albers et al.¹¹ reported that support for restaurant bans among Massachusetts youth in 2001-2002 ranged between 53% and 61%, depending on the strength of local restrictions on smoking in restaurants. Support was similar among adolescents in metropolitan Ohio, with 56% agreeing that smoking should not be allowed in restaurants without bars.¹² Our report adds to these findings by examining knowledge of SHS risk and support for restaurant bans among middle and high school students in North Carolina where there is relatively low adult support. As support for restaurant bans has been shown to vary by smoking status in adults⁸ and youth,¹¹ data will be reported separately for current smokers and those who have never smoked. Support will also be analyzed by knowledge of the harmfulness of SHS, an analysis not previously reported.

Methods

Data were collected through the school-based North Carolina Youth Tobacco Survey (YTS) in the fall of 2003. Details of the YTS methodology used nationally have been described elsewhere.¹³ In brief, the North Carolina Youth Tobacco Survey used a two-stage cluster sample design to produce a representative sample of public middle school (grades 6-to-8) and high school (grades 9-to-12) students. Sampling was stratified by region to assure a balanced representation of schools from the coastal, piedmont, and mountain areas.

The first-stage sampling frame consisted of all public schools (including charter schools) that included at least one grade between 6 and 12. Schools were selected with a probability proportional to school enrollment size. The second sampling stage consisted of systematic equal probability sampling of second-period classes in each school sampled. An average of three second-period classes was sampled per school. All students in the sampled classes were eligible to participate in the survey except those who are routinely exempt from written tests because of language or learning barriers. Participation was voluntary and anonymous, and school procedures for parental permission were followed. The overall response rate for the middle and high school samples was 77.0% and 77.4%, respectively. Non-participation was primarily due to absenteeism. The final sample included 3,073 students from 104 middle schools and 3,261 students from 96 high schools.

The self-administered, 78-item questionnaire included questions on tobacco use, SHS, and attitudes toward tobacco policies. The specific questions asked about SHS are given at the bottom of Table 1. Responses are reported for the total sample and for two subgroups defined by smoking status: current smokers and

never smokers. Respondents who reported smoking within the past 30 days were classified as current smokers. Respondents who reported having never smoked a cigarette were classified as never smokers. The comparison of current versus never smokers intentionally omits former smokers to heighten the contrast based on smoking status; hence the number of current smokers and never smokers will be less than the totals reported in the table. All percentages reported are weighted to reflect the likelihood of sampling each student and to compensate for differing patterns of non-response. SUDAAN was used to compute variance estimates and 95% confidence intervals.¹⁴

Results

Among middle school students, 9.3% (95% CI 7.7 to 10.9) were classified as current smokers and 70.5% (95% CI 66.5 to 74.5) as never smokers. Among high school students, 27.3% (95% CI 24.0 to 30.6) were classified as current smokers and 40.4% (95% CI 36.3 to 44.5) as never smokers.

Middle school students were slightly less likely than high school students to believe that SHS was harmful, although the percentage for both groups was quite high, 87.6% (95% CI 85.3 to 89.9), and 91.6% (95% CI 90.0 to 93.2), respectively (see Table 1). Current smokers were less likely than never smokers to respond that SHS was harmful, but the percentage that did was still high for both middle school (83.1%, 95% CI 77.3%, 88.9) and high school (85.1%, 95% CI 81.4 to 88.8) students. Less than half of middle school (48.6%, 95% CI 45.8 to 51.4) and high school (40.2%, 95% CI 37.0 to 43.4) students responded that smoking should be banned in restaurants. Support for smoke-free restaurants was much higher among those who had never smoked compared to current smokers: 55.4% (95% CI 51.4 to 58.4) vs. 22.6% (95% CI 15.0 to 30.2) at the middle school level and 58.8% (95% CI 55.0 to 62.6) versus 16.1% (95% CI 11.6 to 20.6) at the high school level. Similar data and trends were observed for the question on personal preference for smoke-free space. Support was much higher for the adoption of tobacco-free policy at schools—91.8% (95% CI 90.4 to 93.2) of middle school students and 75.5% (95% CI 72.5 to 78.5) of high school students favored such policies. Even among current smokers, there was majority support for tobacco-free school policies in both the middle schools (68.8%, 95% CI 60.6 to 77.0) and high schools (51.1%, 95% CI 55.6 to 56.6).

Support for tobacco control policies among never smokers tended to be higher among students who believed SHS was harmful (see Table 2). Still, support for smoking bans in restaurants at the middle or high school level never reached 60%, even among the select group of students who had never smoked and who believed SHS was harmful. Similarly, only 61.4% (95% CI 57.9 to 64.9) (middle school) and 54.2% (95% CI 50.1 to 58.3) (high school) of this select group stated that they preferred to eat in smoke-free restaurants. In contrast, support for tobacco-free schools was considerably higher in this group—96.6% (95% CI 95.6 to 97.6) and 89.7 (95% CI 86.3 to 93.1) for the middle and high school, respectively. Among current smokers,

Table 1.
Knowledge of the Harmfulness of Secondhand Smoke (SHS) and Support for Tobacco Control Policies among Middle and High School Students, North Carolina, 2003

		Middle School		High School	
		n	% (95% CI)	n	% (95% CI)
Believe SHS is harmful ¹	All*	2,934	87.6 (±2.3)	3,211	91.6 (±1.6)
	Current smokers	268	83.1 (±5.8)	861	85.1 (±3.7)
	Never smokers	1,927	88.6 (±2.6)	1,226	95.5 (±1.8)
Think smoking should be banned in restaurants ²	All	2,901	48.6 (±2.8)	3,191	40.2 (±3.2)
	Current smokers	269	22.6 (±7.3)	854	16.1 (±4.5)
	Never smokers	1,896	55.4 (±3.0)	1,224	58.8 (±3.8)
Prefer smoke-free restaurants ³	All	2,882	53.0 (±3.1)	3,169	39.5 (±2.3)
	Current smokers	271	23.6 (±7.8)	851	18.9 (±4.2)
	Never smokers	1,874	60.0 (±3.6)	1,212	53.3 (±3.8)
Think it is important for school to be 100% tobacco-free ^{4,5}	All	2,547	91.8 (±1.4)	2,735	75.5 (±3.0)
	Current smokers	226	68.8 (±8.2)	726	51.1 (±5.5)
	Never smokers	1,679	95.9 (±1.0)	1,040	89.3 (±3.3)

1 Responded "Definitely yes" or "Probably yes" to the question "Do you believe the smoke from other people's cigarettes is harmful to you?"

2 Responded "Not allowed at all" to the question "In restaurants, to what extent do you think that smoking should be allowed?"

3 Responded "I prefer places where no smoking is allowed" to the question "When you go out to a place with your friends and family, what smoking policy do you prefer?"

4 Responded "Very important" or "Somewhat important" to the question "In your opinion, how important is it that your school district adopt a "100% tobacco-free school policy?"

5 Students who responded that their district was already 100% tobacco-free were omitted from the analysis.

The data collection protocol was approved by the Centers for Disease Control and Prevention and the research protocol was approved by the institutional review board at Hampshire College.

* All includes current, former, and never smokers. Details are only given for current and never smokers.

support for tobacco control policies was associated with SHS knowledge at the middle school level, but the confidence intervals were quite wide. Among current smokers at the high school level, knowledge appeared to have little impact on support for tobacco control policies.

Discussion

This paper is the first to examine support for restaurant- and school-based tobacco control policies among youth in a major tobacco-growing state. The results are mixed. Knowledge is high, with approximately nine of ten middle and high school students reporting that SHS is harmful to non-smokers. These results are comparable to those reported in the 2000 National Youth Tobacco Survey,¹² suggesting that North Carolina youth

are as informed about the risks of SHS as youth nationally. Also, approximately nine of ten middle school students and three of four high school students supported the adoption of a 100% tobacco-free policy in their school districts. This latter analysis excluded the 11% (middle school) and 14% (high school) of students who responded that their district had already adopted such a policy, districts that presumably are more supportive of tobacco control measures in schools. Hence, the overall support for such a policy is probably even greater.

Support for bans on smoking in restaurants, however, was much less common. Less than half of students supported such bans, and support was no greater than that reported by North Carolina adults surveyed in 2000 (44%).⁶ It is unclear why support among youth is not greater, given the high awareness

Table 2.
Support for Tobacco Control Policies among Middle and High School Students, by Knowledge of the Harmfulness of Secondhand Smoke, North Carolina, 2003

		Middle School				High School			
		Believes SHS is harmful ¹		Does not believe SHS is harmful		Believes SHS is harmful ¹		Does not believe SHS is harmful	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Think smoking should be banned in restaurants ²	All*	2,541	50.7 (±3.1)	342	34.1 (5.7)	2,905	41.8 (3.0)	263	23.9 (9.6)
	Current smokers	207	25.0 (±8.3)	56	12.5 (±9.9)	714	16.7 (±5.1)	126	13.1 (±8.2)
	Never smokers	1,703	57.2 (±3.7)	191	40.7 (±8.6)	1,165	59.8 (±4.2)	55	40.7 (±21.2)
Prefer smoke-free restaurants ³	All	2,521	54.4 (±3.2)	344	43.8 (±7.3)	2,889	40.7 (±2.6)	261	27.0 (±7.2)
	Current smokers	208	24.1 (±9.8)	57	24.4 (±18.0)	712	19.6 (±4.8)	127	15.4 (±8.7)
	Never smokers	1,682	61.4 (±3.5)	190	48.8 (±8.7)	1,155	54.2 (±4.1)	54	34.1 (±23.2)
Think it is important for school to be 100% tobacco-free ^{4,5}	All	2,239	93.6 (±1.4)	289	80.3 (±5.2)	2,487	77.0 (±3.0)	229	60.0 (±7.2)
	Current smokers	170	72.7 (±8.5)	50	52.0 (±19.6)	603	51.8 (±6.0)	112	48.6 (±10.6)
	Never smokers	1,513	96.6 (±1.0)	163	89.7 (±5.5)	993	89.7 (±3.4)	44	78.5 (±15.3)

1 Responded "Definitely yes" or "Probably yes" to the question "Do you believe the smoke from other people's cigarettes is harmful to you?"

2 Responded "Not allowed at all" to the question "In restaurants, to what extent do you think that smoking should be allowed?"

3 Responded "I prefer places where no smoking is allowed" to the question "When you go out to a place with your friends and family, what smoking policy do you prefer?"

4 Responded "Very important" or "Somewhat important" to the question "In your opinion, how important is it that your school district adopt a "100% tobacco-free school policy?"

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of the risks of SHS and strong support for tobacco-free policies in schools (policies which are actually more restrictive as they apply to all tobacco use, and not just cigarettes). This apparent inconsistency could be due to a number of factors. Perhaps youth are aware of the risks of SHS, but do not perceive these risks as serious. Similarly, youth might view restaurants, unlike schools, as voluntary, short-term exposures and not as daily worksites for restaurant staff. Thus, they might not see the need for government regulation of what appears to be a voluntary risk.

It is also possible that these attitudes reflect the hard work of the school-based tobacco control programs, which have focused their advocacy work on the adoption of tobacco-free policies in school districts. These efforts appear to have been successful, both in the overwhelming support among youth for such policies and the tripling of tobacco-free school districts in the past two years—from 15 at the start of 2003 to 45 by the

end of 2004. In contrast, less emphasis has been placed thus far on tobacco use in public places, such as restaurants. The results here point to the need for school-based advocacy around this issue as well, both in reducing youth exposure to SHS and helping to solidify voter support for such protections once they reach adulthood.

The percentage of students who prefer to patronize smoke-free restaurants is not much higher than those who support bans. Even among never smokers who are aware of SHS risks, only a modest majority prefers smoke-free space. As with tobacco use itself, knowledge is not sufficient for avoiding risk. This finding supports the innovative work of Albers et al., who examined the acceptability of smoking in restaurants to youth in Massachusetts relative to social norms, as measured by community-level smoking restrictions.¹¹ While the relationship between acceptability and community-level restrictions was not statistically significant, it was in the hypothesized inverse direction (acceptability

declined as restrictions increased), which underscores the importance of social norms in both research and advocacy education at the school level. In this research, we attempted to examine support for tobacco control policies by tobacco-free school status; however, too few districts had implemented such policies at the time of this survey for a meaningful analysis. As we continue tracking support for tobacco control policies in the biannual YTS in North Carolina, we will broaden our analysis to include information about community-level norms as reflected by school-based policies. In tobacco-producing states such as North Carolina, analysis and policy may further benefit from the use of geographic mapping software to target

interventions where tobacco use is high. We also encourage the Youth Tobacco Survey coordinators in other states to add questions on tobacco control policies so that such policies can be tracked and responded to nationally. **NCMedJ**

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REFERENCES

- 1 US Environmental Protection Agency. Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders. December 1992.
- 2 Steenland K. Passive smoking and the risk of heart disease. *JAMA* 1992;267(1):94-99.
- 3 California Environmental Protection Agency. Health Effects of Exposure to Environmental Tobacco Smoke. September 1997.
- 4 US Department of Health and Human Services. Report on Carcinogens, Tenth Edition 2002. National Toxicology Program.
- 5 Brooks D, Mucci L. Support for smoke-free restaurants among Massachusetts adults, 1992-1999. *Am J Public Health* 2001;91(2):300-303.
- 6 Centers for Disease Control and Prevention. State-specific prevalence of current cigarette smoking among adults, and policies and attitudes about secondhand smoke—United States, 2000. *Morb Mortal Wkly Rep* 2001;50(49):110-116.
- 7 Conlisk E, Siegel M, Lengerich E, Mac Kenzie W, Malek S, Eriksen M. The status of local smoking regulations in North Carolina following a state preemption bill. *JAMA* 1995 Mar 8;273(10):805-807.
- 8 Centers for Disease Control and Prevention. Youth Tobacco Surveillance—United States, 1998-1999. *Morb Mortal Wkly Rep* 2000;49(SS10):1-93.
- 9 Unger JB, Rohrbach LA, Howard KA, Boley Cruz T, Johnson CA, Chen X. Attitudes toward anti-tobacco policy among California youth: Associations with smoking status, psychosocial variables and advocacy actions. *Health Educ Res* 1999;14(6):751-763.
- 10 Ma GX, Shive S, Legos P, Tan Y. Ethnic differences in adolescent smoking behaviors, sources of tobacco, knowledge and attitudes toward restriction policies. *Addict Behav* 2003;28(2):249-268.
- 11 Albers AB, Siegel M, Cheng DM, Biener L, Rigotti NA. Relation between local restaurant smoking regulations and attitudes towards the prevalence and social acceptability of smoking: A study of youths and adults who eat out predominantly at restaurants in their town. *Tob Control* 2004;13(4):347-355.
- 12 Jordan TR, Price JH, Dake JA, Shah S. Adolescent exposure to and perceptions of environmental tobacco smoke. *J Sch Health* 2005;75(5):178-186.
- 13 Centers for Disease Control and Prevention. Youth Tobacco Surveillance—United States, 2000. *Morb Mortal Wkly Rep* 2001;50(SS04):1-84.
- 14 Shah BV, Barnwell BG, Bieler GS. SUDAAN: Software for the Statistical Analysis of Correlated Data: User's Manual, release 7.5, 1997. Research Triangle Park, NC: Research Triangle Institute, 1997.



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