

Cigarette Sales to African-American and White Minors in Low-Income Areas of Baltimore

ABSTRACT

Objectives. This study documented illegal sales of cigarettes to minors in low-income African-American and White urban areas in East Baltimore.

Methods. Six youths, aged 14 through 16 years, were sent to a random sample of 83 corner stores to attempt to purchase cigarettes. The youths provided the investigators with data on merchant, store, and purchase characteristics.

Results. The youths successfully purchased cigarettes in 85.5% of the stores; 58% of the stores displayed five or more cigarette advertisements outside their premises.

Conclusions. Cigarette sales to minors and associated advertising remain prevalent in this urban community. (*Am J Public Health.* 1997; 87:652-654)

Carolyn C. Voorhees, PhD, Robert T. Swank, MA, Frances A. Stillman, EdD, Donna X. Harris, Herbert W. Watson, Jr, MDiv, and Diane M. Becker, ScD, MPH

Introduction

Although smoking prevalence in young adults declined rapidly from 1974 to 1980, four national surveys show that prevalence has been relatively constant since 1984.¹ Factors that may have influenced this situation include increased availability of cigarettes (particularly discount cigarettes), youth-targeted advertising by tobacco companies, and insufficient antitobacco education.²⁻⁵

Smoking initiation involves a complex interplay of environmental, social, and personal factors.³ One promising environmental approach to the prevention of smoking among youths is to limit youths' access to tobacco products.⁶ Public opinion surveys support measures to discourage tobacco sales to minors.⁷⁻⁹ It has been illegal for merchants to sell tobacco products to minors in all states,^{10,11} but levels of enforcement have been abysmal. A Department of Health and Human Services survey found that 56% of states reported no statewide enforcement activity, and another 24% reported that their main enforcement activity consists only of inspections for noncompliance.¹²

The purchase of tobacco products by minors is difficult to document because it is illegal in many states for youths to make such purchases. Prior to enactment of a law prohibiting the purchase of cigarettes by minors in 1994, Baltimore had an opportunity to document illegal sales. Compliance checks using minors are now illegal.¹³

Youths' access to tobacco products in stores in lower-income neighborhoods has not been well studied. Variables in proposed causal models of youth access and sales include ethnicity, age of both merchant and buyer, the presence of others in the store, and familiarity of the merchant with the buyer.¹⁴⁻¹⁶ A model using these variables proposed by Landrine et al.¹¹ has not heretofore been tested. We provide a test of this model in two low-income urban communities.

This study documented illegal sales of cigarettes to minors in local stores and assessed the importance of the aforementioned hypothesized sociocultural factors in facilitating illegal tobacco transactions.

Methods

Study Design

Forty-two contiguous census tracts in the Johns Hopkins Medical Institution's East Baltimore catchment area, a lower-socioeconomic-status area, were selected according to the following criteria: in each tract, more than 75% of the population had to be either African American or White, and more than half of the households had to have incomes of \$25 000 or less per year (78% below \$40 000 per year).¹⁷ The percentage of high school graduates in the catchment area (45%) was lower than that in Baltimore City (62%) or across the state (79%).¹⁸

Because our previous work had shown that more than 70% of cigarette purchases are made in small convenience (mom-and-pop) stores, these were targeted for the study. In a 1990 random-digit-dialing survey in this community, smokers most frequently mentioned the corner store as the site of cigarette purchases. Stores were randomly selected from a community mapping conducted in 1993 in the catchment area. A 44% random sample of 168 stores in the African-American census tracts ($n = 74$) and 100% of stores (46) in the White census

At the time of the study the authors were with the Johns Hopkins University School of Medicine, Division of General Internal Medicine, Center for Health Promotion, Baltimore, MD. Frances A. Stillman is now with the National Cancer Institute, Division of Cancer Prevention and Control. Ms Harris is with the State of Maryland, Department of Health.

Requests for reprints should be sent to Carolyn C. Voorhees, PhD, National Heart, Lung and Blood Institute, Division of Epidemiology and Clinical Applications, 6701 Rockledge, MSC 7936, Rm 8215, Bethesda, MD 20892

This paper was accepted June 28, 1996.

tracts were selected to yield approximately similar numbers in both areas.

The study was conducted immediately before implementation of the Maryland law prohibiting the purchase of tobacco by minors.

Recruitment and Training of Participants

Six nonsmoking minors (2 White females, 2 African-American males, and 2 African-American females) aged 14 through 16 years were recruited from among key informants from the representative communities. Attempts to recruit White male minors were unsuccessful, for reasons that remain unclear. Parental consent was obtained, and parents were encouraged to attend the 1-hour training session with the youths on the morning of the undercover buying operation. The youths received an explanation of the project and the purchase protocol,¹⁹ training in data collection methods, role-play in the protocol, and practice in data collection. The youths received lunch, a T-shirt, and \$10 for their participation. The investigators provided transportation and supervision during the operation.

The youths worked in pairs; the African-American pairs visited stores in the African-American area, and the White pair visited stores in the White area. The youths were instructed not to attempt a purchase if they saw someone they knew in the store. If the store was crowded they were to wait until the store was nearly empty. They entered the stores in pairs, but only one member of the pair attempted a purchase in each store. Each youth attempted purchases at half the stores in his or her respective area (26 in the African-American area, 15 in the White area). The youths were instructed to complete the sales transaction.

Clergy and other community members participated in the study design and interpretation, and Baltimore City officials were consulted on legal aspects and merchant relation issues.

Data Collection

The survey instrument addressed youth and merchant demographic characteristics; merchant's request for age identification; presence in the store of signs warning against purchase by minors; number of cigarette advertisements posted outside store; price and brand of cigarette purchased; existence of vending machines; and availability of cigarettes from a self-service display. Cigarettes pur-

TABLE 1—Characteristics of Successful Cigarette Purchases by Minors: A Comparison of African-American and White Survey Areas, Baltimore, Md

	African-American Area Stores (n = 46)		White Area Stores (n = 25)		P
	No.	%	No.	%	
Merchant characteristics					
Sex					
Male	19	41.3	10	40.0	NS ^a
Female	27	58.7	15	60.0	
Race					
African American	5	10.9	0	0.0	.000 ^a
Asian	37	80.4	12	48.0	
White	3	6.5	7	28.0	
Hispanic	0	0.0	5	20.0	
Other	1	2.2	1	4.0	
Racially concordant with buyer					
Yes	5	10.9	7	28.0	NS ^a
No	41	89.1	18	72.0	
Estimated merchant age, mean (SD), median	35.2 (10), 35		36.1 (11), 35		NS ^b
Store and purchase characteristics					
Merchant did not ask age of buyer	46	100.0	24	96.0	NS ^a
Merchant did not ask for identification	46	100.0	25	100.0	NS ^a
No signs posted warning against sales to minors	46	100.0	25	100.0	NS ^a
Merchant did not ask for whom purchaser was buying	46	100.0	25	100.0	NS ^a
Others present in store	36	78.3	11	44.0	NS ^a
Cigarette ads visible on outside of store					
≤4	30	65.2	17	68.0	NS ^a
≥5	16	34.8	8	32.0	

Note. NS = not significant at P < .05.
^aChi-square test.
^bStudent's t test.

chased were collected and labeled with store identification.

Results

Of the 74 African-American stores selected, 52 (70%) were surveyed. Of the 46 stores selected from the White areas, 31 (67%) were surveyed. The remainder were not surveyed because they were no longer in existence or had moved and could not be located. The minors were successful in purchasing cigarettes in 46 of the 52 stores (88.5%) in African-American neighborhoods and in 25 of the 31 stores (80.6%) in White neighborhoods. Characteristics of successful purchases are presented in Table 1. It is notable that ethnic discordance between buyer and merchant was greatest in the African-American community, where

80.8% of the merchants were Asian (compared with 38.7% in White areas). No African-American merchants were approached in stores in White areas, and White merchants were approached in only three stores in African-American neighborhoods. African-American youths were thus far more likely to encounter a merchant of a different ethnic group (88.5%) than were White youths (61.3%). In general, there was no difference in proportion of successful purchases between older youths (45%) and younger youths (54%). More females than males made successful purchases (59% vs 41%), although this finding is likely to be affected by the gender and age distribution of the purchasers.

Ethnic (racial) concordance and numbers of cigarette advertisements posted outside the store were entered into a

forward stepwise multiple logistic regression analysis predicting sale or no sale. The overall model was significant ($P = .002$) and fit reasonably well (Hosmer-Lemeshow goodness-of-fit $P = .35$).²⁰ The only predictors of a successful sale were racial discordance of the buyer and merchant (odds ratio [OR] = 8.18; 95% CI = 1.86, 36; $P = .005$) and having five (the median number) or fewer cigarette advertisements posted outside the store (OR = 7.47; 95% CI = 1.27, 43.8; $P = .02$). Merchant race (Asian) was replaced by the discordance variable in the previous model with similar results (OR = 3.85; 95% CI = 1.03, 14.34; $P = .04$). All other variables in both models were nonsignificant. A P level of .10 was the criterion for a variable to enter the model and only these two variables met the criterion. Estimated age of merchant and age of buyer were entered as continuous variables in one model; these variables were found to be not significant and were eliminated in the final model.

Discussion

The results of this study show that sales of cigarettes to minors are highly prevalent in both African-American and White low-income urban areas of Baltimore. The most significant predictor of a successful purchase is racial discordance between the young buyer and the merchant. This is an important finding that has previously been hypothesized.¹⁴ This finding may represent a greater likelihood of merchants' understanding the cultural antismoking norm in youths of their own ethnicity, or it may be a function of the large number of Asian merchants, who may not feel the same degree of investment in youths of a community with which they are not socially or culturally identified. It is possible, but doubtful, that simple language barriers may inhibit these merchants' understanding of laws. While we are unable to explain the advertising effects, we posit that merchants who sell to minors may be covert about their advertising practices. This may also be a reflection of campaigns to reduce sales to minors.

Gender relationships between sellers and buyers could not be accurately examined because the distribution of buyer gender in African-American and White areas was not similar. An important finding is that no differences were found between African-American and White low-income areas in the illegal sales to

minors. Purchases were easily made by all youths.

Advertising has been postulated to be an important factor for the initiation of smoking in youth.³ Other measures to limit access are clearly necessary, as initiatives such as the advertising ban are likely to be insufficient.²¹⁻²⁴ Nonetheless, the restriction of advertising is one piece of an armamentarium to reduce smoking among youths, and it should be incorporated with other efforts.

This study provides data related to a high-risk subset of youth²⁵ who purchase cigarettes and offers some utility for designing methods of compliance monitoring. It also provides baseline information that is useful in a comprehensive approach to tobacco control in low-income areas. □

Acknowledgments

This research was supported by grant 5R01HL43604-07 from the National Heart, Lung, and Blood Institute.

The authors would like to acknowledge Tyrinda Griffin and her team of youth surveyors for their enthusiasm and commitment to Project BLESS activities and the East Baltimore Community, and Heart, Body and Soul and CURE (Clergy United for Renewal in East Baltimore) for their insight and commitment to Project BLESS and community health.

References

- Nelson DE, Giovino GA, Shopland DR, Mowery PD, Mills SL, Eriksen MP. Trends in cigarette smoking among US adolescents, 1974-1991. *Am J Public Health*. 1995;85:34-40.
- Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General*. Rockville, Md: US Dept of Health and Human Services; 1989. DHHS publication CDC 89-8411.
- Preventing Tobacco Use among Young People: A Report of the Surgeon General*. Atlanta, Ga: Centers for Disease Control and Prevention; 1994.
- Pierce JP, Gilpin E, Burns DM, Whalen B, Shopland D, Johnson M. Does tobacco advertising target young people to start smoking? *JAMA*. 1991;266:3154-3158.
- Cummings KM, Pechacek T, Shopland D. The illegal sale of cigarettes to US minors: estimates by state. *Am J Public Health*. 1994;84:300-302.
- Feighery E, Altman DG, Sgaffer G. The effects of combining education and enforcement to reduce tobacco sales to minors. *JAMA*. 1991;266:3168-3171.
- Centers for Disease Control. Public attitudes regarding limits on public smoking and regulation of tobacco sales and advertising—10 U.S. communities, 1989. *MMWR Morb Mortal Wkly Rep*. 1991;40:344-345, 351-353.
- Bailey WJ, Crowe JW. National survey of public support for restrictions on youth access to tobacco. *J School Health*. 1994;64:314-317.

- Stillman FA, Voorhees CC, Becker DM. Smoking prevalence comparisons in urban African American communities utilizing two survey methods. *Ann Behav Med*. 1994;16(suppl):56. Abstract.
- Centers for Disease Control. Accessibility of cigarettes to youths aged 12-17—United States, 1989. *MMWR Morb Mortal Wkly Rep*. 1992;41:169-173.
- Centers for Disease Control. State laws on tobacco control—United States, 1995. *MMWR Morb Mortal Wkly Rep*. 1995;44(ss-6):1-29.
- State Oversight of Tobacco Sales to Minors*. Washington, DC: US Dept of Health and Human Services, Office of the Inspector General; April 1995. DHHS publication OEI-02-94-00270.
- Curran JJ. Preventing youth access to tobacco products in Maryland. *Md Med J*. 1995;44:792-795.
- Landrine H, Klonoff EA, Fritz JM. Preventing cigarette sales to minors: the need for contextual sociocultural analysis. *Prev Med*. 1994;23:322-327.
- Klonoff EA, Fritz JM, Landrine H, Riddle RW, Tully-Payne L. The problem and sociocultural context of single-cigarette sales. *JAMA*. 1994;271:618-620.
- Erickson AD, Woodruff SI, Wildley MB, Kenney E. A baseline assessment of cigarette sales to minors in San Diego, California. *J Community Health*. 1993;18:213-224.
- Census of Population and Housing, 1990: Summary Tape File 3 on CD-ROM (Maryland)* [machine readable data files]. Washington, DC: US Dept of Commerce, Bureau of the Census; 1992.
- Baltimore City Department of Planning. Education statistics derived from 1990 census data. Compiled September 22, 1992.
- Community Organizers Manual*. Springfield, Mass: Stop Teenage Addiction to Tobacco (STAT); 1993.
- Lemeshow S, Hosmer DW. The use of goodness-of-fit statistics in the development of logistic regression models. *Am J Epidemiol*. 1982;115:92-106.
- Kaplan RM, Orleans CT, Perkins KA, Pierce JP. Marshalling the evidence for greater regulation and control of tobacco products: a call for action. *Ann Behav Med*. 1995;17:3-14.
- Altman DG, Linzer J, Kropp R, Descheemaeker N, Feighery E, Fortmann SP. Policy alternatives for reducing tobacco sales to minors: results from a national survey of retail chain and franchise stores. *J Public Health Policy*. Autumn 1992:318-331.
- Novotny TE, Romano RA, Davis RM, Mills SL. The public health practice of tobacco control: lessons learned and directions for the states in the 1990s. *Ann Rev Public Health*. 1992;13:287-318.
- Altman DG, Rasenick-Douss L, Foster V, Tye JB. Sustained effects of an educational program to reduce sales of cigarettes to minors. *Am J Public Health*. 1991;81:891-893.
- Conrad KM, Flay BR, Hill D. Why children start smoking cigarettes: predictors of onset. *Br J Addict*. 1992;87:1711-1724.