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Sustained Effects of Educating Retailers to Reduce Cigarette Sales to Minors

SYNOPSIS

DESPITE STATE LAWS prohibiting the purchase of tobacco by minors, the ease with which underage youth can purchase cigarettes has been documented nationwide. The public health community as well as policy makers have called for a combination of retailer education and enforcement of laws prohibiting tobacco sales to minors. Enforcement activity may not be feasible in many communities, however, and an educational intervention may be the only option.

This paper reports results of a 6-month followup assessment following a face-to-face education intervention with retailers to reduce cigarettes sales to minors in San Diego County, CA. A control-experimental group, pre-post design was employed to study the sustained effects of the program on the illegal sale of cigarettes to minors. A total of 236 stores were visited by minors, ages 14–17 years, with the intent of purchasing cigarettes. Information was collected three times: pre-test, immediately following the intervention, and 6 months after the intervention ended. The groups included a no-treatment control group of 108 stores and an intervention group of 128 that received three educational visits from project staff over a 1-year period. Community education via media and informational presentations was also conducted.

As previously reported, a 68-percent pretest sales rate was found for stores overall. Immediately following the intervention, 32 percent of the intervention group and 59 percent of the control group sold cigarettes to minors. These results were maintained 6 months following the conclusion of the intervention. Results are discussed in terms of education versus use of enforcement.

Despite State laws prohibiting the purchase of tobacco by minors (1), an estimated 255 million packs of cigarettes were sold illegally to minors in 1991 (2). The ease with which underage youth can purchase cigarettes over the counter and at vending machines has been documented nationwide, with studies indicating successful purchases from 34 to 91 percent of stores and 79 to 100 percent of vending machines (3–5). Variations in the ability to purchase may be attributed partly to differences in confederates' age, in that younger children have more difficulty purchasing than older teens. Another factor that may contribute is the lack of enforcement of existing laws that prohibit tobacco sales to minors. A report by the Inspector General, Department of Health and Human

Services, concluded that active enforcement of tobacco distribution laws is rare and usually the result of local initiatives supported by the community (6).

Open availability of tobacco has been confirmed by youths' self reports. The 1989 National Center for Health Statistics survey of adolescents nationwide estimated that 16 percent of teenagers smoked regularly, and an additional 29 percent experimented with cigarettes. Of those who had smoked during the previous week, 72 percent reported buying their own cigarettes (7). In a survey by Cummings and colleagues of more than 4,000 9th graders in 12 U.S. communities, 82 percent of students reported that it would be easy for them to purchase cigarettes (8).

Given children's easy access to tobacco products, it is no surprise that most smokers began their habit at about the age of 12, well before the legal age of purchase. Early use of tobacco has been found to result in long-term use of the product, although a clear majority of adolescents (92 percent) do not expect to be smokers in the future (9). In theory, reducing youths' supply of tobacco should reduce their use of tobacco; however, few studies have been conducted to validate this assumption (10-12). In a study by Stanton and coworkers, however, 42 percent of adolescent smokers reported difficulty in obtaining cigarettes as a reason for not smoking (13).

Community interventions conducted by mail to reduce illegal cigarette sales to minors resulted in an increased number of stores posting warning signs (14), but had little or no effect on deterring sales (14,15). Researchers in Santa Clara, CA, conducted an intervention which included community and merchant education and contact with corporate chief executive officers. Although the intervention achieved significant results—illegal sales dropped from 74 percent to 39 percent (16)—recidivism resulted in a 59-percent sales rate within 6 months after the intervention ended (17).

Although the research by Altman and colleagues that illustrated an educational campaign alone can achieve sustained effects in reducing illegal cigarette sales, this landmark study directed community health professionals nationwide to encourage law enforcement authorities to cite stores selling cigarettes to minors. Indeed, communities that have combined education and enforcement of existing State laws or new local ordinances have achieved significant results (10,15,18,19).

Despite its potential for effectiveness, the enforcement

strategy has drawbacks. Telephone conversations between the present researchers and tobacco control colleagues nationwide indicate that introducing and passing such legislation, or encouraging local law enforcement to enforce existing laws can be an insurmountable task and may not be feasible in many communities. An educational, retailer-oriented intervention may be the only option for some communities.

The purpose of this study was to assess the sustained effects of an intensive, face-to-face retailer educational intervention to reduce teens' access to tobacco (Project T.R.U.S.T.). Previously, we reported methods and positive immediate posttest results of the intervention, which included direct retailer education and community education through media and informational presentations (20,21). Our study reports the results of an assessment completed 6 months following the conclusion of the 1-year intervention.

Methods

Setting and research design. During 1991, Project T.R.U.S.T. (Teens and Retailers United to Stop Tobacco) of San Diego State University, in cooperation with five community agencies, conducted an educational campaign to reduce cigarette sales to minors in six low-income, ethnically diverse communities in San Diego County (20).

A control-experimental group, pre-post design was employed to study sustained effects of the intervention. Briefly, stores located within

close proximity to the headquarters of the five agencies were assigned to an intervention or control condition. During a 1-year period, intervention stores received quarterly visits by agency staff trained to deliver educational materials for managers, salesclerks, and customers. In addition, T.R.U.S.T. employed community education and media strategies to encourage retailer compliance and to promote community awareness. Procedures for identifying, recruiting, and educating stores within communities are described in detail elsewhere (5,20,21).

A baseline assessment indicated that minors attempting to purchase cigarettes were successful in 68 percent of the retail stores (5). Attempted cigarette purchases immediately following the year-long intervention indicated a significant change in sales rate, with approximately 32 percent of the intervention stores selling cigarettes to minors compared with 59 percent of the control stores (20). These results were released to the media and received broad coverage. To determine maintenance of intervention effects 6 months post-

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intervention, 236 stores (91 percent) assessed at pre- and posttest were revisited by minors attempting to purchase cigarettes. No additional intervention was conducted between the posttest of December 1991 and the followup assessment of June 1992.

Data collection procedures. For the 6-month followup assessment, 19 teens ages 14 to 17 years were recruited and trained by project staff using techniques similar to those used at previous assessments (5,20,21). Teens were promised no financial compensation but were given promotional incentives (that is, t-shirts, sports bags) for participation. During a 2-week period, the teens, who were blind to condition, were accompanied by four adult volunteers and instructed to attempt purchases of either Marlboro or Camel cigarettes, popular brands among teens (22). The ringing up of the cigarettes on the cash register constituted a "sale" to a minor. (Outcomes of attempted and actual purchases have been documented as comparable (5)).

Teens attempted to visit and purchase tobacco at all 260 stores having both baseline and posttest data. Twenty-four sites were lost at followup due to 16 store closures and the unavailability of cigarettes for sale over the counter at 8 stores, resulting in a sample of 236 stores. There was no differential attrition rate between conditions. The final followup sample of 128 intervention stores and 108 control stores included 16 supermarkets, 65 gas or convenience stores, 62 liquor stores, 91 independent markets, and 2 stores where the store type was not recorded. The majority (approximately 65 percent) of the stores were independently owned and operated.

Measures and analyses. On a Sales Outcome Report (SOR) precoded with stores' name, location, and type of

retail outlet, teens recorded data pertaining to the outcome of the purchase attempt. Teens also recorded their own name, age, and sex as well as the date and time of the purchase attempt. Sales outcome was recorded as a dichotomy (0 = no sale, 1 = sale).

Cochran's Q_c , a nonparametric test to assess changes in correlated proportions over the three periods, was used to evaluate overall changes in the sale of cigarettes to minors by group. When significant, additional analyses (that is, McNemar tests) were conducted to determine which time periods differed. Only the 236 stores with three data points (pretest, posttest, and followup) were included in the analyses.

Results

The figure presents pretest, posttest, and followup sales outcomes for the 236 stores. (The pretest and posttest changes are similar to those reported previously (20) for a slightly larger sample of stores.) Differential group change was detected. Control stores showed a slight decrease over time (although not statistically significant), with a total decrease of 10 percentage points. Intervention stores showed a statistically significant decrease in illegal sales to minors over time (Cochran's $Q_c = 46.54$, $df = 2$, $P < .001$), with a dramatic 36-percentage-point reduction seen pre-to-post testing. This decrease among intervention stores was maintained 6 months later.

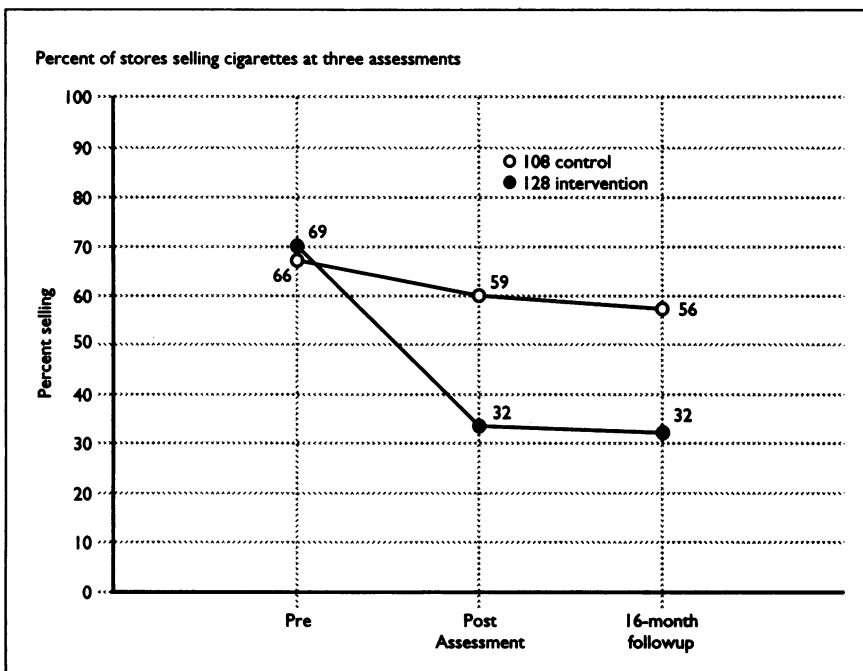
As shown in the table, all intervention store types, with the exception of supermarkets, maintained a sales rate significantly lower than their pretest rate. (The results for supermarkets should be interpreted with caution because of the small number of stores.) Independent markets and liquor stores showed further reductions from posttest to followup, but these changes were not statistically significant.

Gas station and convenience stores showed a rebounding of sales at followup, although this increase also was not statistically significant.

Discussion

The reduction of illegal cigarette sales found after 1 year of education for retailers and the community was maintained 6 months following the conclusion of the intervention. The intervention remained effective in reducing teens' access to tobacco for all store types except supermarkets, for which too few stores were assessed to give a reliable estimate of effectiveness.

The only other known study of this kind by Altman and colleagues (17) in Santa Clara, CA, resulted in dramatically different results. Although our study showed no relapse



Percent of stores selling cigarettes to minors at three assessment periods by store type, San Diego, CA, 1990-92

Store type	Percent selling			Overall change, level of significance
	Pre-intervention	Post-intervention	6-month followup	
16 supermarkets:				
Intervention	40	20	40	ns
Control	55	45	55	ns
91 independent markets:				
Intervention	72	37	28	.001
Control	76	62	59	ns
65 gas or convenience:				
Intervention	68	24	42	.001
Control	63	59	52	ns
62 liquor:				
Intervention	71	39	25	.01
Control	65	65	59	ns

¹Significantly different from pre-intervention assessment based on McNemar test.
 NOTES: No post-intervention values differed significantly from 6-month followup values. Stores in the table total 234 because information about store type was missing for 2 stores.

in sales outcome, the study by Altman showed substantial recidivism among intervention stores. An examination of the two interventions revealed many similarities but also distinct differences in educational methods.

Both projects solicited support for project goals through media and community education. The Santa Clara project mailed or dropped off educational materials at stores; Project T.R.U.S.T. staff provided merchants with more direct education—face-to-face contact. T.R.U.S.T. staff offices were located within close proximity to the intervention stores, perhaps facilitating a sense of shared community interest and opportunities for repeated visits to stores. The bilingual and bicultural staff members personally shared materials with store owners and managers during sometimes lengthy presentations.

Unlike the materials delivered to Santa Clara merchants, T.R.U.S.T. provided numerous and comprehensive items for use by store managers, sales clerks, and customers, including a training videotape for sales clerks. Repeated educational sessions, though more time consuming (and therefore more costly), may have supplied retailers with the necessary support to maintain lower cigarette sales to minors. (A less costly educational model has since been adopted by the project; county health inspectors facilitate the tobacco sales education via their frequent and regular schedule of visits to stores. These 5-10-minute visits have been observed by the project staff to decrease significantly illegal sales as well (unpublished data, 1993)). T.R.U.S.T. also positively reinforced retailers compliant with tobacco sales laws through paid newspaper advertisements, a strategy that was very well received by independent merchants and corporate executives, according to anecdotal accounts.

This study demonstrated that an educational intervention for merchants, without enforcement tactics, resulted in sustained lower illegal cigarette sales rates for at least 6 months following the intervention. It was interesting to note the slight but steady decline in the illegal sales rate among control stores. Although not statistically significant, this may indicate a general trend towards intolerance of youth access to tobacco and a willingness among retailers to comply with sales to minors laws, even though these laws are rarely enforced.

These results should be encouraging for those working within communities where active enforcement is not an option. Indeed, subsequent efforts by the Project T.R.U.S.T. staff to promote enforcement have yielded very little cooperation from San Diego County law enforcement personnel for conducting tobacco sting operations. Police and sheriff departments have only consented to discuss the issue with beat officers during roll call. This lack of cooperation may be due partly to challenges in California courts regarding the use of underage minors to conduct alcohol sting operations in retail stores. Also, it is an unfortunate reality that law enforcement personnel often cannot be spared for such activities.

To summarize, the authors contend that the process of reducing illegal sales of tobacco to minors is an evolving one with distinct, sequential steps including (a) documentation of the local problem, (b) community education, (c) retailer education, and (d) retailer education reinforcement (for example, through media coverage). A fifth step, policy change, may be warranted. Adoption of local ordinances requiring vendor licensing fees to support continued education and enforcement by local health—not police—departments may be necessary should communities be unable to address the problem adequately through education alone. Also, as over-the-counter illegal sales decrease, communities may need to consider banning sales through vending machines, an easy and open alternative for youth tobacco purchasers.

Despite the success of the intervention in this study, an illegal sales rate of more than 30 percent is still quite high. Until rates decline further, children will be able to identify and frequent those store willing to make illegal profits. Regular enforcement in conjunction with merchant education and policy changes could result in the desired low sales rates.

It is important for both researchers and community organizers to recognize the potential positive impact of retailer education interventions. Further research on the impact of other efforts to educate merchants is warranted, including programs delivered by volunteer youth or via broadcast media. Too few studies have been conducted to justify abandoning educational approaches in favor of mandating enforcement and policy changes to address the problem of cigarette sales to minors.

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