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The prevalence and marketing of electronic cigarettes in proximity to at-risk youths: An investigation of point-of-sale practices near alternative high schools

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Abstract

This study examines the point-of-sale marketing practices used to promote electronic cigarettes at stores near schools that serve at-risk youth. One hundred stores selling tobacco products within a half mile of alternative high schools in Southern California were assessed for this study. Seventy percent of stores in the sample sold electronic cigarettes. Convenience stores heavily frequented by youth had the highest number of interior ads for e-cigarettes and were the most likely to employ in-store product placement strategies. Increased exposure to the promotion of these products at the point-of-sale poses a challenge for anti-smoking efforts directed toward vulnerable populations.

Keywords

Electronic Cigarettes; At-risk youth; Marketing; Point-Of-Sale

Introduction

Electronic Cigarettes: What We Know

Electronic cigarettes or “e-cigarettes” are the latest trend in the commercialization of smoking whereby consumers inhale a vaporized nicotine solution simulating the traditional smoking experience. Since their introduction into the American market in 2007, sales have increased from \$20 million annually to \$1.7 billion as of 2014 (UBS, 2015). Analysts predict that e-cigarette sales will continue to grow by approximately 24% per year through 2018 (Wahba, 2014). In addition, the percentage of high school students who have tried e-cigarettes has increased steadily to a current rate of 25% (CDC, 2015). This trend is problematic given a report from the Centers for Disease Control and Prevention suggesting e-cigarettes may facilitate smoking uptake among youth (Bunnell et al., 2015). Moreover, this trend may be exacerbated by the rapid increase in the availability of e-cigarettes at retail outlets near schools (Wagoner et al., 2014).

Marketing to Vulnerable Populations: Alternative High School Students

The marketing of e-cigarettes near schools serving at-risk students deserves special attention. Alternative high schools in California serve students with multiple risk behaviors, ranging from chronic absenteeism to substance abuse (Ruiz de Velasco et al., 2008). Students at such schools report smoking rates two to three times greater than students at regular high schools (Black, Sussman, Unger, Pokhrel, & Sun, 2010; Grenard et al., 2008).

To date, no studies have been conducted on e-cigarette availability near alternative high schools. Several studies have assessed e-cigarette availability near traditional schools (Rose et al., 2014; Wagoner et al., 2014) and one study assessed in-store marketing practices (Hsu, Myers, Ribisl, & Marteau, 2013). Research on the marketing of cigarettes after the 1998 Master Settlement Agreement shows that tobacco companies focus the majority of their marketing budgets on “point-of-sale” advertising and promotions (Paynter & Edwards, 2009; Robertson, McGee, Marsh, & Hoek, 2015). Now that the major tobacco companies have joined the existing field of e-cigarette manufacturers, assessment of point-of-sale marketing practices near vulnerable populations is warranted.

Point-of-sale Marketing

Point-of-sale marketing concerns any advertising or promotional techniques that exist at the physical location where products are sold. Research has shown that point-of-sale tobacco marketing is correlated with increased positive brand user imagery (Donovan, Jancey, & Jones, 2002), impulse purchases (Wakefield, Germain, & Henriksen, 2007), and increases in the likelihood of smoking uptake among youth (Slater, Chaloupka, Wakefield, Johnston, & O'Malley, 2007). Further, a recent meta-analysis of point-of-sale tobacco promotion found that frequent exposure to tobacco marketing was positively correlated with smoking susceptibility and experimentation (Robertson, Cameron, McGee, Marsh, & Hoek, 2016). Point-of-sale price reductions (Feighery, Schleicher, Cruz, & Unger, 2008) are a mechanism to keep prices affordable in spite of tax policies designed to curb uptake among youth; however no such taxes are currently in effect for e-cigarettes. An analysis of pricing information for e-cigarettes will help determine their affordability compared to other tobacco products. The exposure to, and branding of, e-cigarettes at the point-of-sale must also be evaluated. Prior research has demonstrated that tobacco products are often placed within a “power wall” behind the checkout counter, representing coveted retail space that is clearly visible to adolescents (Feighery, Ribisl, Clark, & Haladjian, 2003).

This report aims to shed light on the current state of e-cigarette marketing at stores near alternative high schools. Data on the availability and marketing of e-cigarettes will better inform researchers and policy advocates as to how these products are being promoted across a variety of retail environments.

Methods

Sampling

Data was collected as part of a cross-sectional study of stores in Southern California licensed to sell tobacco products. Stores were selected on the basis of their proximity to

alternative high schools. Using data obtained from the California Department of Education, 183 alternative high schools were identified that had at least 100 students and were within 100 miles of Claremont, California. All schools were contacted and invited to take part in the study. Thirty-seven schools agreed to participate. Using ArcMap (v10.1, ESRI) and tobacco retailer licensing records obtained from the California Board of Equalization, 153 stores within a half mile of each of the 37 schools were identified. A half-mile was selected because this range is defined as ‘walking distance’ (Henriksen, Schleicher, Dauphinee, & Fortmann, 2012). Field assessments revealed that 20 stores had stopped selling tobacco products or were no longer in operation. Of the 133 active stores surveyed, 10 owners (7.5%) did not allow any form of assessment and an additional 23 owners (17.3%) did not permit photography. The analytic dataset was restricted to the 100 stores (75.2%) at which both types of assessments were performed. This smaller sample paralleled the original sample in terms of both geographic placement and store type distribution.

Procedure

Stores were visited by two trained coders between July and August of 2014. Coders were equipped with Samsung GALAXY S III phones programmed with Fulcrum software provided by Spatial Networks. Each coder independently photographed all tobacco products and advertisements before performing as many on-site assessments as time permitted. That maximum assessment time for a single store was three hours. Photographs were analyzed at a later date to verify information entered in the field and complete unfinished assessments.

At each store, a comprehensive assessment of all tobacco products was conducted, yet only items pertaining to e-cigarettes are presented here unless otherwise noted. Inter-rater reliability between the two coders was calculated utilizing weighted coefficients for close-ended items ($k=0.74$ to 0.96) and intra-class correlation for numeric open-ended items ($ICC=0.995$ to 1.000). A consensus coder resolved discrepancies.

Assessment

Stores were categorized ($k=0.90$) using a scale adapted from prior studies (Feighery, Ribisl, Schleicher, Lee, & Halvorson, 2001; Schleicher, Johnson, Dauphinee, & Henriksen, 2013). The availability of e-cigarettes ($k=0.96$) and the number of brands offered ($ICC=0.995$) were determined using the photographs taken. Coders identified the three e-cigarette brands with the greatest number of product facings at each store ($ICC=0.997$) since prior research has shown that facings influence both consumer brand evaluation and selection (Chandon, Hutchinson, Bradlow, & Young, 2009). Promotional strategies used to market these products was assessed with a 2-item scale ($k=0.84$). The first item evaluated whether the product was part of a power wall while the second item measured whether the product was positioned within four feet of a cash register (Schleicher et al., 2013; Sklenar, 2004).

The total number of tobacco-related advertisements at stores that offered e-cigarettes was calculated using the photographs. For each advertisement, the tobacco product was documented ($k=0.96$). These data were used to compute the e-cigarette share of ad voice at each store (Henriksen et al., 2012), defined in this study as the proportion of tobacco-related advertisements promoting e-cigarettes. Point-of-sale advertising techniques were measured

($k=0.74$) using a 2-item scale that assessed whether the advertisement was visible from the interior or exterior of the store or positioned within four feet of a register (Schleicher et al., 2013).

Prices of the two most common brands of e-cigarettes across all stores (NJOY and Blu) were measured ($ICC=1.000$) (Schleicher et al., 2013). For each brand, the pre-tax cost of the cheapest, single-cartridge package was recorded. The promotion of a special price or sale was also documented.

Results

Descriptive analyses were performed using SPSSv22. Seventy percent of stores sold e-cigarettes. Across all stores, 105 e-cigarette brands were identified. On average, 6.31 brands ($SD=9.15$) were offered at each store. The three brands most frequently present at tobacco retailers (i.e. the “top three brands”) were NJOY (available at 50% of stores), Blu (46%), and MarkTen (32%). The top three brands were included in a power wall at 61% of the stores and were within four feet of a register at 68% of the stores. E-cigarette share of ad voice was calculated at 24.9% ($SD=21.6$) with a mean of 1.63 exterior ads ($SD=2.70$) and 6.50 interior ads ($SD=6.00$). On average, 5.54 e-cigarette ads ($SD=5.37$) were within four feet of a register. The average price for NJOY was \$7.89 ($SD=1.05$) and \$9.29 for Blu ($SD=2.74$). NJOY was on sale at 20.8% of all locations whereas Blu had no sale prices at any location. Comparisons across store type are depicted in Table 1.

Discussion

Implications

Results from this study provide evidence of how prevalent e-cigarette marketing has become at the point-of-sale. The percent of tobacco retail outlets near alternative high schools selling e-cigarettes (70%) is markedly higher than revealed in prior school-based studies (Rose et al., 2013) which reported levels of only 31-34%. As the focus of this study was on tobacco retailers near alternative high schools, we cannot say if the prevalence of electronic cigarettes differs significantly from regular high schools, only that it appears to be on the rise. This corresponds with a rise in the electronic cigarette and vapor market which grew steadily to approximately 1.7 billion in 2014 (UBS, 2015). While this was still only a fraction of the nearly 80 billion market value for traditional cigarettes that year (World Lung Foundation, 2015), the finding in this study that the share of ad voice for electronic cigarettes is nearly 25% across retail environments may signal a significant shift in the tobacco industry's marketing and sales priorities.

Convenience stores deserve special attention as they are heavily frequented by youth (Henriksen, Feighery, Schleicher, Haladjian, & Fortmann, 2004; Sanders-Jackson, Parikh, Schleicher, Fortmann, & Henriksen, 2015). Convenience stores, both with and without gas stations, had the second (90.9%) and third (87.5%) highest levels of e-cigarette availability, the highest use of in-store product placement strategies, and the highest number of interior ads for e-cigarettes.

Limitations

The results from this study represent the state of electronic cigarette marketing in Southern California at the time this study was conducted (Summer 2014) and may not reflect broader trends in other states or countries or the current state of brand prevalence in this rapidly changing market. In addition, this research only provides descriptive data on electronic cigarette marketing and therefore no causal claims are made. The high prevalence of marketing suggests that causal relationships between point-of sale electronic cigarette marketing and smoking behavior in alternative high school students should be studied in future research.

A notable methodological issue is the use of digital photography. This technique facilitated time-consuming assessments that would be impractical to conduct in the field. However, the method also increased the refusal rate. While the participation of 75.2% of stores is greater than the 56% reported in prior photography-based point-of-sale research (Spanopoulos, Ratschen, McNeill, & Britton, 2012), it is still less than the participation rates of traditional store audit studies (Rose et al., 2014; Hsu et al., 2013; Wagoner et al., 2014). Future studies might resolve this issue by initially performing on-site assessments of select measures and then obtaining photographs. More novel solutions include crowdsourcing in-store photography (Kim, Lieberman, & Dench, 2015) or using real-time video to document point-of-sale marketing from the consumer perspective (Sorensen, 2009).

Conclusion

The state of play for e-cigarette prevalence, promotion, and marketing is rapidly evolving with no signs of slowing in the near future. In less than ten years e-cigarettes have grown into a billion dollar industry as new products continue to be introduced into the retail environment. As stores frequented by youth become increasingly saturated with point-of-sale tobacco marketing, the effect on e-cigarette uptake among vulnerable populations, such as students attending alternative high schools, should be carefully monitored.

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Table 1

Electronic Cigarette Prevalence and Marketing by Store Type

Store Type	Descriptive	Products Within Stores		Placement Within Stores		Promotion At Stores				Pricing At Stores	
	N	Product Availability	Brands Offered	Product In Power Wall	Product Near Register	Share of Ad Voice	Exterior Ads	Interior Ads	Ads Near Register	NJOY	Blu
All Stores	100	70%	6.31 (SD = 9.15)	61.0%	68.0%	24.9% (SD = 21.6)	1.63 (SD = 2.70)	6.50 (SD = 6.00)	5.54 (SD = 5.37)	\$7.89 (SD = 1.05)	\$9.29 (SD = 2.74)
Tobacco Shop	8	100%	21.88 (SD = 20.42)	87.5%	87.5%	36.4% (SD = 29.4)	4.13 (SD = 3.00)	8.38 (SD = 5.93)	6.88 (SD = 3.98)	\$8.24 (SD = .50)	\$9.79 (SD = .44)
Convenience (with gas)	11	90.90%	6.10 (SD = 2.47)	90.9%	90.9%	28.6% (SD = 14.0)	3.90 (SD = 5.00)	12.60 (SD = 6.47)	10.60 (SD = 5.99)	\$7.99 (SD = 0)	\$9.09 (SD = 2.84)
Convenience (without gas)	8	87.50%	6.14 (SD = 2.80)	87.5%	87.5%	25.2% (SD = 4.3)	1.14 (SD = 1.21)	14.57 (SD = 5.32)	12.43 (SD = 5.35)	\$7.99 (SD = 0)	\$9.99 (SD = 0)
Liquor Store	20	80%	4.38 (SD = 4.54)	60.0%	75.0%	34.6% (SD = 29.3)	0.75 (SD = 1.13)	3.06 (SD = 2.59)	2.56 (SD = 2.45)	\$7.10 (SD = 2.03)	\$8.99 (SD = 3.22)
Gas Station	16	68.80%	3.55 (SD = 2.38)	68.8%	68.8%	13.2% (SD = 8.6)	0.64 (SD = 0.81)	5.09 (SD = 5.38)	4.64 (SD = 5.07)	\$8.38 (SD = .95)	\$8.56 (SD = 2.99)
Pharmacy	6	66.70%	4.75 (SD = 3.785)	50.0%	66.7%	28.2% (SD = 20.5)	–	4.25 (SD = 3.40)	4.25 (SD = 3.40)	\$7.99 (SD = 0)	\$7.16 (SD = 4.91)
Supermarket	6	66.70%	1.50 (SD = .58)	66.7%	66.7%	0% (SD = 0)	–	–	–	\$7.99 (SD = 0)	\$9.99 (N = 1)
Small Market	17	52.90%	3.11 (SD = 2.37)	41.2%	52.9%	19.6% (SD = 15.3)	1.67 (SD = 1.94)	4.22 (SD = 2.82)	3.44 (SD = 2.51)	\$7.83 (SD = .98)	\$11.12 (SD = 4.01)
Eatery (Café, Donut Shop, etc.)	8	12.50%	1 (N = 1)	0.0%	12.50%	0% (SD = 0)	–	–	–	\$8.50 N = 1	–