

# Comparison of e-cigarette marketing and availability in tobacco retail outlets among diverse low-income communities in California

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## ABSTRACT

**Objective** Research examining marketing and availability of electronic cigarettes (e-cigarettes) within tobacco retail stores is limited, especially among vulnerable communities. However, tobacco retailers tend to be the first point of access to e-cigarette exposure, especially among youth. In response, store observations were conducted among tobacco retailers across five ethnically diverse, low-income communities.

**Design** Trained community health workers recorded the presence of e-cigarette products, marketing, self-service displays, product pricing and product placement in the tobacco retail environment across American-Indian Tribal lands in California (n=96) and low-income African-American, Hispanic/Latino (HL), Korean-American (KA) and Non-Hispanic White (NHW) communities in Southern California (n=679) from January 2016 to January 2017. Store characteristics and pricing were analysed by ethnic community.

**Results** Compared with retailers in NHW communities, retailers across all other communities were less likely to sell e-cigarette and flavoured e-cigarette products and were less likely to have self-service displays. Compared with retailers in NHW communities, retailers across all other communities were less likely to have e-cigarettes placed near youth-friendly items, while retailers in KA and HL communities were less likely to have exterior advertising compared with retailers in NHW communities.

**Conclusions** Findings indicate differences in e-cigarette availability and marketing by ethnic community. In addition, placement of products and marketing that expose youth to e-cigarette and other tobacco products within the retail environment should be restricted and regulated by policymakers and tobacco regulatory agencies to reduce the burden of tobacco-related diseases among vulnerable populations.

## INTRODUCTION

Examining the availability of electronic cigarette (e-cigarette) products among retailers licensed to sell tobacco is a growing public health issue as the US Food and Drug Administration (FDA) recently announced its plan to limit the sale of flavoured e-cigarettes to age-restricted locations within the retail environment.<sup>1</sup> Previous research found the majority of e-cigarette sales occurred in convenience stores, with sales consisting mostly of disposable e-cigarette products.<sup>2</sup> Retail stores were also the most common source of e-cigarette advertising exposure among adolescents.<sup>3</sup> Vape shops are a popular source of e-cigarette products; however,

research indicates vape shop clientele consists mostly of middle-aged, Non-Hispanic White (NHW) adults.<sup>4</sup>

Prior research examining e-cigarette availability and marketing included NHW, African-American (AA) and Hispanic/Latino (HL) communities.<sup>5,6</sup> These comparisons are important as AAs are more likely to die from smoking-related diseases compared with NHWs,<sup>7</sup> and the leading causes of death among HLs (cancer, heart disease and stroke) can be caused by smoking<sup>7</sup>; however, there is a lack of research including other populations at high risk for tobacco-related diseases. Smoking rates among NHW (15.2%), AA (14.9%) and HL (9.9%) adults in the USA are near the national average of 14%; however, smoking rates are highest among American-Indian (AI) (24%) and Korean-American (KA) (20%) adults.<sup>8</sup>

E-cigarettes are the most commonly used tobacco product among adolescents<sup>9</sup> and evidence indicates e-cigarette use increases the risk of cigarette smoking among youth and young adults.<sup>10</sup> Similar to the tobacco industry, e-cigarette companies are increasing the use of advertisements and promotions.<sup>11</sup> Tobacco retailers tend to be the first point of access to e-cigarette marketing among youth,<sup>3</sup> yet prior research has not examined e-cigarette availability and marketing among tobacco retailers located in vulnerable communities. The current study addresses this gap by conducting store observations in tobacco retail stores across five low-income, ethnic communities in California.

## METHODS

### Sample

To identify communities (which consisted of clusters of census tracts) in Los Angeles County, zip codes with a median or below median household income were ranked by percentage of AA, HL, KA and NHW residents, and up to 15 zip codes were selected for each focus community. Tobacco retailers were randomly selected from the ranked zip codes using the California Department of Tax and Fee Administration (CDTFA) list of licensed tobacco retailers. Retailers were eligible if they were verified as being an independent store, market, convenience store or tobacco store during our visit. In order to recruit 800 eligible retailers, 1337 stores were visited (response rate=57.9%). Identifying tobacco retailers on AI Tribal land required a unique strategy as federally recognised tribes are sovereign nations and retailers are not required to



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obtain state licensure to sell tobacco products.<sup>12 13</sup> Stores on Tribal land were identified in Southern, Central and Northern California using Google Maps, Esri Business Analyst data and store listings provided by CDTF. The number of tobacco retailers varied across Tribal lands; therefore, all stores on Tribal land or within a 1-mile radius were included in the sample. Details of community and tobacco retailer sampling strategies can be found elsewhere.<sup>12 13</sup>

Community health workers and *promotores de salud* (who reflected the ethnicity of each community) were recruited and trained to serve as data collectors. Training was identical for all data collectors and included in-person workshops and supervised practice observations. Data collectors visited selected stores and invited store owners or managers to participate in the study. Store observations took approximately 20 min to complete and each participating retailer received a gift card. A total of 775 store observations were completed across AA (n=194), HL (n=189), NHW (n=196), KA (n=100) and AI (n=96) communities. A smaller subset of retail stores in KA communities was observed as there were fewer predominantly KA neighbourhoods in the Los Angeles area. Kappa statistics were computed to test the inter-rater reliability of the availability and marketing variables, which ranged from fair to substantial (0.42–0.90). Photos of the retailer environment were taken for 82% of the stores surveyed and were used to reconcile disagreements between raters.

**Measures**

Store observation measures were derived from a modified version of the ‘Standardized Tobacco Assessment for Retail Settings’ observation tool.<sup>14</sup> All measures included in the analysis were specific to e-cigarette products.

*E-cigarette availability* was the sale of any disposable, battery-powered electronic device that vaporises nicotine, not including e-hookah or e-cigars. *Flavoured e-cigarette availability* was the sale of any disposable e-cigarette product labelled as having a flavour other than tobacco or menthol (eg, fruit, sweet, liquor or mint). *Price promotion* was a sign or label indicating a special price discount or multipack discount. *Self-service display* was a display with an opening that faced customers and allowed customers to access product without employee assistance.

*Proximity to youth products* was any e-cigarette product placed within 12 inches of any toys, candy, gum, slushy/soda machine or ice cream products. *Youth level advertising* was any interior e-cigarette advertisement placed within 3 feet of the floor. *Exterior advertising* was any e-cigarette product advertised outside the store (eg, windows, doors and sidewalk). The presence of each measure was dichotomised with a ‘1’ indicating that item was observed. In addition, the lowest advertised prices of any e-cigarette product were recorded for each retailer (in US dollars). If the price was not advertised, retailers were asked for price information.

**Analysis**

This analysis reports on 12 consecutive months of data collection from January 2016 to January 2017. Frequencies and percentages were calculated for all retailer and store observations measures. A one-way analysis of variance with Bonferroni multiple comparisons test compared e-cigarette prices across communities. The availability and marketing measures were regressed on community ethnicity, with NHW serving as the reference group. For all analyses, p<0.05 were considered significant.

**RESULTS**

Compared with retailers in NHW communities, retailers across all other communities were less likely to sell e-cigarette and flavoured e-cigarette products and were less likely to have self-service e-cigarette displays (table 1). Compared with retailers in NHW communities, retailers in AA, KA and HL communities were less likely to have e-cigarettes placed near youth-friendly items, while retailers in KA and HL communities were less likely to have exterior advertising (table 1). E-cigarette pricing significantly differed by community, F (4,291)=2.87, p=0.02. On average, the cheapest e-cigarette cost significantly less in AA communities than in KA communities (table 1). No other comparison was significant.

**DISCUSSION**

Our findings indicate that the availability and marketing of e-cigarettes in tobacco retail stores differ across diverse lower-income communities in California. Greater levels of e-cigarette

**Table 1** OR and 95% CI representing the likelihood that e-cigarette availability, marketing and product placement were present in tobacco retail outlets by community, with frequencies and percentages

Community	E-cigarettes sold		Flavoured e-cigarettes sold		E-cigarette price promotions		E-cigarette self-service display	
	Yes N (%)	OR (95% CI)	Yes N (%)	OR (95% CI)	Yes N (%)	OR (95% CI)	Yes N (%)	OR (95% CI)
NHW n=196	138 70.41	–	115 58.67	–	13 6.63	–	24 12.24	–
AA n=194	71 36.60	0.24* (0.15 to 0.37)	45 23.32	0.21* (0.13 to 0.33)	9 4.64	0.68 (0.28 to 1.64)	1 0.52	0.03* (0.004 to 0.27)
KA n=96	32 32.00	0.19* (0.11 to 0.33)	21 21.00	0.18* (0.10 to 0.32)	5 5.00	0.74 (0.25 to 2.14)	2 2.00	0.14* (0.03 to 0.63)
H/L n=189	36 19.05	0.09* (0.06 to 0.15)	28 14.81	0.12* (0.07 to 0.20)	9 4.76	0.70 (0.29 to 1.68)	1 0.53	0.03* (0.005 to 0.28)
AI n=100	50 52.08	0.45* (0.27 to 0.75)	38 39.58	0.46* (0.28 to 0.75)	3 3.13	0.45 (0.12 to 1.63)	1 1.04	0.07* (0.01 to 0.56)

  

Community	Proximity to youth products		E-cigarette advertisements within 3 feet of floor		E-cigarette exterior advertising		Lowest priced e-cigarette	
	Yes N (%)	OR (95% CI)	Yes N (%)	OR (95% CI)	Yes N (%)	OR (95% CI)	US\$	Mean (US\$)
NHW n=196	33 16.84	–	20 10.20	–	31 15.82	–	1.99	8.54
AA n=194	12 6.19	0.32* (0.16 to 0.65)	16 8.25	0.79 (0.39 to 1.57)	28 14.51	0.90 (0.51 to 1.57)	1.99	9.01
KA n=96	4 4.00	0.20* (0.07 to 0.59)	7 7.00	0.66 (0.27 to 1.62)	5 5.00	0.28* (0.10 to 0.74)	3.00	6.93
H/L n=189	3 1.59	0.07* (0.02 to 0.26)	5 2.65	0.23 (0.08 to 0.65)	12 6.35	0.36* (0.17 to 0.72)	3.99	7.98
AI n=100	13 13.54	0.77 (0.38 to 1.54)	4 4.17	0.38 (0.12 to 1.15)	12 12.50	0.76 (0.37 to 1.55)	3.00	8.80

AA, African-American; AI, American-Indian; H/L, Hispanic/Latino; KA, Korean-American; NHW, non-Hispanic white.

availability and marketing in NHW communities corroborate earlier research.<sup>5 6</sup> While the FDA has outlined restrictions on e-cigarette sales in the retail environment, advertising and product placement of e-cigarettes in retail stores remains unregulated. This study indicates the need for greater regulation of e-cigarette products across multiple retail environments, not just vape shops, given that e-cigarette products and marketing were observed in areas accessible to youth. E-cigarette products in the retail environment may provide adult users a less harmful alternative to combustible tobacco products; however, youth exposure to e-cigarettes in the retail environment may lead to youth initiation of nicotine products.<sup>1</sup> Policymakers and regulatory agencies should move to reduce youth exposure to e-cigarette products in the retailer environment by regulating product placement and marketing, which, in turn, can reduce the burden of cancer and other tobacco-related diseases.

This study found that retailers in NHW communities were more likely to feature e-cigarette products and marketing. Previous research found that NHW adults reported greater e-cigarette use and awareness, and perceive e-cigarettes as safer than combustible cigarettes compared with their AA and Latino counterparts.<sup>15</sup> Greater e-cigarette availability in NHW communities may be explained by higher use, awareness and positive perceptions among community members, which may lead to increased customer demand. Within the context of other emerging tobacco products, current findings differ from previous research which found that retailers within non-white communities were more likely to sell and advertise little cigars and cigarillos.<sup>13</sup>

### Limitations

This study is cross-sectional in design, which limits the ability to measure differences across time. The study was limited to ethnic communities in Southern California and AI Tribal lands in California and results may not generalise to ethnic communities in other regions of the USA. In addition, it is possible that community characteristics not captured by our study may contribute to the observed differences by ethnic community.

### Conclusions

These findings support greater regulation of e-cigarette availability and marketing in the tobacco retail environment, especially within communities with greater e-cigarette availability and marketing. Direct access to e-cigarette products in the retail environment should be restricted by placing products in areas

that require employee assistance, while e-cigarette advertising should be regulated and restricted.

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**Contributors** PE and LB-G conceptualised the study. PE led data analysis and wrote the article. RG, CS and RB contributed to writing and revisions. YR managed the data collection and contributed to revisions. LB-G contributed to revisions and was the principal investigator of the broader study.

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### What this paper adds?

- ▶ All e-cigarette availability, product placement and marketing measures were observed across all five, lower income, ethnic communities, indicating the pervasive presence of e-cigarette products and marketing.
- ▶ This study supports regulatory actions aimed at e-cigarette marketing and its availability in multiple tobacco retail environments, not just vape shops.
- ▶ On the basis of our findings and prior research, within the retail environment, access to e-cigarettes should require employee assistance, and e-cigarette advertising should be restricted and regulated.

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