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Online pricing policies for e-cigarettes

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BRIEF REPORT

Pricing and sales tax collection policies for e-cigarette starter kits and disposable products sold online

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Abstract

Background. *Previous studies have examined marketing characteristics of e-cigarettes sold online and others have examined e-cigarettes pricing in retail (non-Internet) settings. This study expands on these findings by examining pricing and marketing characteristics of interest among e-cigarette online vendors.* ***Methods.*** *Structured web searches were conducted from August–September 2014 to identify popular e-cigarette Internet vendors. We then collected pricing data (e-cigarette starter kits and disposables), sales tax collection policies and other vendor marketing characteristics. Average price for each product category was then compared with marketing characteristics using linear regression for continuous variables and independent* t*-tests for binary variables.* ***Results.*** *Our searches yielded 44 e-cigarette Internet vendors of which 77%* (n = *34) sold a total of 238 starter kit offerings* (M*price = \$55.89). Half* (n = *22) sold disposable types of e-cigarettes* (M*price = \$7.17 p/e-cigarette) at a price lower than reported elsewhere in retail settings. Average disposable e-cigarette prices were also significantly higher for vendors displaying more health warning notices* (P = *0.001). Only 46% disclosed sales tax collection policies and only 39% collected sales tax in their state of business.* ***Conclusions.*** *This study expands on current understanding of e-cigarette pricing and availability online and finds variation in e-cigarette pricing may be influenced by type of product, use of online health warnings and vendor sales tax collection policies. It also finds that e-cigarette online access and availability may be impacted by a combination of pricing and marketing strategies uniquely different from e-cigarette retail settings that requires further study and targeted policy-making.* [Cuomo RE, Miner A, Mackey TK. Pricing and sales tax collection policies for e-cigarette starter kits and disposable products sold online. *Drug Alcohol Rev* 2015]

Key words: electronic cigarette, Internet sale, nicotine delivery, regulatory science, vaping.

Introduction

Only a few studies have examined online e-cigarette pricing or marketing and attempted to determine how these factors impact e-cigarette access and uptake. Some studies have examined marketing characteristics of Internet vendors that sell e-cigarettes, focusing on the number of brands, flavours, nicotine strengths and health marketing claims [1,2]. One study found that minors were able to easily acquire e-cigarettes from online purchase attempts [3]. Other studies have reviewed e-cigarette pricing and availability in commercial retail settings and have attempted to estimate pricing impact on e-cigarette demand and sales volume [4,5]. Expanding on these findings, this study seeks to describe the pricing of e-cigarette starter kits and disposables offered by popular Internet e-cigarette vendors while also describing how these vendors market their products. Expanding on current understanding of how Internet e-cigarette vendors *both* price and market their products can lead to increased awareness of how the Internet influences consumer behaviour to initiate, purchase and use e-cigarettes. These factors are crucial given the Food and Drug

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Administration's (FDA) position that the 2009 *Family Smoking Prevention and Tobacco Control Act* extended its authority to regulate e-cigarettes as newly 'deemed' tobacco products, as well as its development of proposed regulations that would for the first time regulate e-cigarettes not marketed for therapeutic purposes.

Methods

We used web search queries on *Google* and *Yahoo!* search engines to identify popular e-cigarette Internet vendors. We only included online storefronts that exclusively sold e-cigarettes directly to consumers. The key terms 'e-cigarette' and 'electronic cigarette' were used, and the first five pages of web links were reviewed. This methodology is consistent with previous studies indicating Internet users rarely access websites beyond these results [6–8]. Our searches yielded 219 website links, 139 which were excluded because they were information-only sites (e.g. news sites). Another 36 were excluded for the following reasons: (i) duplicate site; (ii) sold e-liquid only; (iii) functioned primarily as electronic consumer website (e.g. Amazon.com); (iv) sold by auction (e.g. ebay.com); (v) product reviews/blogs with links to vendors only; (vi) were non-functional; and (vii) websites that promoted e-cigarette vendors (i.e. marketing affiliates) but did not sell directly to consumers. Forty-four e-cigarette vendors met the inclusion criteria.

We examined two e-cigarette product categories: disposable e-cigarettes and e-cigarette start-up kits. E-cigarettes lacking recharging capability were considered disposable. We defined e-cigarette starter kits as those including a battery, a battery-charging device, an atomiser, liquid nicotine and a liquid reservoir. Starter kits for e-pipes, e-cigars and e-shisha were excluded from our analysis. Several other products met the exclusion criteria, including kits with 0% nicotine; those whose contents could not be determined; those that included multiple kits; and those designed not to be recharged.

We also collected information on the sales tax collection policy of the vendor. Sales tax collection status was coded as either: (i) no tax collected, except in the state of vendor; (ii) no tax collected in any state; (iii) tax collected in all states; or (iv) unknown status. A vendor's business address, whether identified as a warehouse or a retail store (if available), was used to determine if it collected tax in its home state.

Other e-cigarette Internet vendor marketing characteristics were also recorded. These included whether a vendor displayed health warnings on their website; categorising vendors as Internet-only versus online vendors that also operated a retail storefront; foreign versus US websites; use of sales promotional strategies (e.g. promo/discount codes; customer reward/loyalty programs; discounts for referrals) and use of age verification (e.g. dialogue box confirming over age of 18; requiring identification documents at check-out). Health warnings were coded as a tally of six elements, where three warnings were for specific populations (pregnant, underage and non-smoking) and three warnings were for safety (not a cessation device, not evaluated by FDA and that nicotine is addictive).

Our primary data end-point (pricing) was recorded using the prices displayed (before application of sales tax, shipping and handling, and any other fees) for disposable e-cigarettes and starter kits observed. These prices were recorded uniformly, regardless of whether the product was advertised with a temporary discount. The average e-cigarette price for each product category was then compared with other vendor characteristics using simple linear regression for continuous variables and independent *t*-tests for binary variables. Web searches and content analyses were conducted from August to September 2014. This study did not require approval from an Institutional Review Board.

Results

Thirty-four vendors (77%) sold starter kits. The mean price of a starter kit was $55.89 (median price: $44.99) with minimum and maximum prices of $10.99 and $199.95, respectively. Twenty-two (50%) e-cigarette Internet vendors sold disposable types of e-cigarettes. Of the 40 distinct e-cigarette disposable brands reviewed, the mean price was $7.17 per e-cigarette (median price: $6.99) calculated by dividing the sales price by the number of disposables sold in each unit. The highest price of any disposable e-cigarette was $10.99, whereas the cheapest was $0.00 (provided as a free sample with a charge of $6.95 for shipping and handling). Disposable e-cigarettes were often marketed online by the number of puffs contained in a pack, usually as 200, 400 or 500 puffs. The average number of marketed puffs per disposable e-cigarette was 412, with a range of 200–600. Average disposable e-cigarette prices were significantly higher for vendors displaying more health warning notices ($P = 0.001$; Figure 1). Price differences were discovered for other marketing characteristics, though results were not statistically significant (Table 1).

Sales tax status was disclosed by only 45% ($n = 20$) of sites and was collected only in the state of business for 39% ($n = 17$) of identified e-cigarette Internet vendors. Seven per cent ($n = 3$) of vendors stated that tax payment is the responsibility of the purchaser and did not collect sales tax. The remaining 55% ($n = 24$) did not disclose their tax collection policies and did not indicate that they collected sales tax.

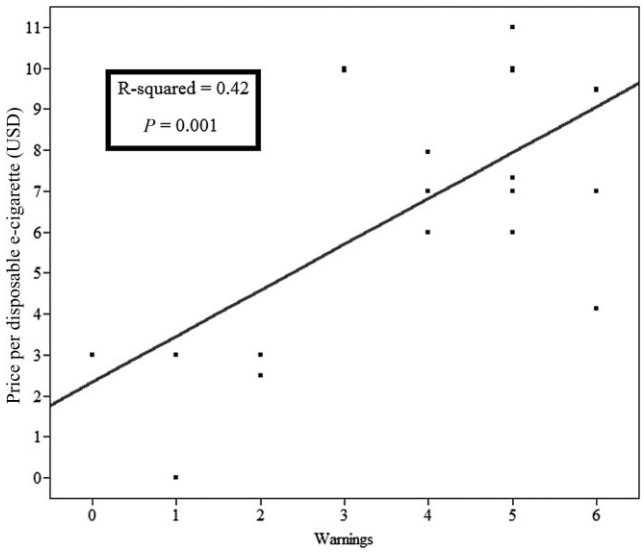

Figure 1. *Linear regression between number of website health warnings and price per disposable.*

Important observed e-cigarette vendor marketing characteristics included that the majority (77%, $n = 34$) sold exclusively through the Internet (i.e. had no physical storefront) and were largely comprised of businesses in the USA (86%, $n = 38$) though six international/foreign vendors were also detected. The vast majority (91%, $n = 40$) used at least one promotional strategy to market their products to consumers, though only 64% ($n = 28$) had any form of age verification (with the majority of these sites only requiring users to 'self-verify' age by clicking through a web dialogue or pop-up box), whether at first viewing of site or through ordering process.

Discussion

Our analysis of starter kits and disposable products reveals a wide range in pricing and accessibility to e-cigarette products online. This included disposable e-cigarettes at the least expensive end of the pricing continuum, the so-called 'cig-a-like' models in the middle, and the mods/tanks at the most expensive end. A great deal of this variation occurred in the starter kit category, where differences in battery capacity, size of tank reservoir, amount of e-liquid and presence/absence of accessories (such as number of charging cables) impacted product pricing. Some kits featured look-a-like e-cigarettes resembling tobacco cigarettes, whereas others included larger pen-style or tank-style devices. Disposable and 'cig-a-likes', with their lower-volume reservoirs, were often described as beginner products, whereas mods/tanks were marketed for more advanced/experienced users.

Table 1. *Average prices of disposables and starter kits, according to vendor characteristics*

Vendor characteristic	Average price per disposable			Average price per starter kit		
Dichotomous attribute	Without attribute	With attribute	*P*-value (from *t*-test)	Without attribute	With attribute	*P*-value (from *t*-test)
Promotion offered	$5.48	$7.12	0.346	$47.22	$61.90	0.253
Also has physical storefront	$7.36	$5.40	0.209	$60.96	$49.49	0.321
Age verification	$6.60	$6.87	0.916	$59.63	$58.85	0.933
Foreign	$6.66	$8.47	0.415	$61.80	$41.81	0.070
Continuous attributes	Average increase per additional unit of attribute		*P*-value (from *t*-test)	Average increase per additional unit of attribute		*P*-value (from *t*-test)
Starter kit options	N/A		N/A	–$0.34		0.649
Average puffs per disposable	$0.00		0.882	N/A		N/A
Warnings shown	$1.12		0.001*	$2.41		0.373

*Significant at $\alpha = 0.05$ level.

Further our subsample of e-cigarette vendors that sold exclusively online exhibited an average disposable e-cigarette price of $7.36 compared with a much higher average price of $10.12 reported in a recent study that examined retail store disposable e-cigarette pricing from a nationally representative sample [4]. This discrepancy may indicate that Internet-only e-cigarette vendors offer more competitive prices due to the lower operating cost of running a website than a traditional store front.

Although prices did not significantly differ based on use of sales promotions, age verification or foreign status of vendors, we did generally observe non-statistically significant variations in pricing for both starter kit and disposable e-cigarette products that bears further study and possibly surveying a larger sample of online vendors. We did find a significant positive association between higher disposable e-cigarette prices and use of more health warnings, which may indicate that some e-cigarette Internet vendors are more vigilant about disclosing the health implications of e-cigarette use, potentially resulting in a need to source safer, more expensive e-cigarettes, though this finding also requires further exploration.

Finally, unlike traditional tobacco products, e-cigarettes are not currently subject to federal excise tax though are subject to state and local sales tax in all but five states [9]. Additionally, two states (Minnesota and North Carolina) have imposed their own excise taxes on e-cigarettes [10]. With less than half of sites disclosing their sales tax policies (and the majority collecting sales tax only enforcing it in their state of business) it appears likely that many Internet-based e-cigarette vendors are able to lower the purchase price for their e-cigarette products in comparison with traditional retail settings, which are required to impose state and local taxes at point-of-sale. Additionally, three vendors placed the onus of tax collection and remittance on the user, and one vendor's policy specifically prohibited sales to customers in Minnesota, possibly in response to the state's excise tax requirement. Though policy on collecting and remitting Internet sales tax is complex, absence of tax collection for e-cigarette sales online can result in cheaper and more accessible products, a key concern for initiation [11–14].

Though limited in its findings, this study expands on existing research by examining *both* the pricing and marketing characteristics used by e-cigarette Internet vendors. The results are important for two reasons: (i) the study identifies how the combination of online pricing variation and use of unregulated marketing strategies has the potential to impact e-cigarette access; and (ii) the study provides early evidence describing different pricing and marketing characteristics as needed to compare practices between retail and online e-cigarette vendors. For example, online vendors that take advantage of lower online pricing by avoiding sales tax collection requirements combined with lack of robust online age verification could represent a significant risk factor for e-cigarettes access and uptake among minors.

Hence, in order for future FDA e-cigarette regulations to be effective, greater attention to the unique challenges posed by Internet e-cigarette sales needs to be prioritised, especially given that the FDA's proposed regulations do not specifically regulate or prohibit online sales. However, more research is needed to further explore differences between commercial in-store e-cigarette pricing and marketing versus that used on the Internet in order to inform future regulatory policy-making.

Limitations

Having relied on two popular search engines, the query results analysed in this study may have been non-random. Additionally, sampling was limited to a specific point in time and was restricted to the first five pages of each set of results. Both of these factors may affect the generalisability of pricing data to other e-cigarette Internet vendors. Because accounts were not established with each vendor and products were not purchased, age verification and sales tax could not be verified beyond the point at which a login was required. We also note that certain third-party websites, such as Amazon.com and ebay.com, may represent popular, convenient and familiar e-commerce platforms that consumers may access for online e-cigarette purchases. Our study excluded these search results as it was difficult to confirm whether sellers operating on these platforms were dedicated e-cigarette vendors versus simply selling an e-cigarette product on a limited/case-by-case basis. Specifically, our study sought to focus on websites that were solely engaged in e-cigarette product sales online, though future studies examining the unique pricing, marketing and access characteristics associated with these platforms is clearly needed.

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