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How Do Waterpipe Smoking Establishments Attract Smokers? Implications for Policy

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Abstract

Background: Given the unique social nature of waterpipe smoking, an important factor contributing to its popularity is the spread of waterpipe establishments.

Objectives: With a focus on implications for regulations, we conducted a qualitative assessment of customers' online reviews on [Yelp.com](https://www.yelp.com) to gain insight into their positive and negative perceptions about waterpipe establishments and products, and identify features that are most important to them.

Methods: In June 2016, an online search of Yelp was conducted to identify waterpipe establishments in Miami, Florida. First, we collected information from the websites on establishments' characteristics and their marketing practices. Then we selected customers' waterpipe-related reviews and used an inductive qualitative method to code and identify key themes associated with positive and negative customers' experiences. Thematic analysis was completed upon reaching saturation. The final coding scheme consisted of 32 codes within eight themes.

Results: The homepage of the establishment was used to promote special discounts and events, while the online waterpipe menu was used to promote the waterpipe products. Our thematic analysis indicated that the variety of flavored tobacco was the most rated positive factor to customers, while the low-quality charcoal and high price were the most negative factors.

Declaration of interest

No potential conflict of interest was reported by the authors.

Conclusions/Importance: Waterpipe online advertisements and promotions should be monitored and restricted. The availability of flavored tobacco, innovative device/accessories, affordable pricing, and charcoal quality are important domains for water-pipe establishments policy/regulation. Regulatory framework for waterpipe establishments should address the complex context of waterpipe including the venue (i.e., physical, website, menu), the tobacco, the device/accessories, and charcoal.

Keywords

Qualitative study; waterpipe establishments; social media; online customers reviews; policy and regulation; Yelp; online advertisement; online promotions

Introduction

While cigarette smoking has declined substantially over the past two decades in the United States (US), waterpipe smoking (also known as hookah, shisha, narghile) is increasing rapidly, particularly among young people (Arrazola et al., 2015; Primack et al., 2013). Nationally, current waterpipe use among high school students almost doubled between 2011 and 2015, and exceeds that of e-cigarettes and cigars among young adults (18–24 years) to become second only to cigarettes (18.2% for waterpipe vs. 19.6% cigarettes, 8.9% cigars, 8.3% electronic cigarettes, and 4.4% smokeless tobacco) (Kasza et al., 2017; Mays et al., 2016). Data from the National Adult Tobacco Survey looking at openness to use non-cigarette tobacco products among young adults (18–29 years) shows that openness to use was greater for waterpipe (28.2%) than e-cigarettes (25.5%) or cigars (19.1%) (Mays et al., 2016). Waterpipe smoking also seems to undermine tobacco control among US youth by being a gateway to cigarettes (Soneji et al., 2015). This dramatic rise of waterpipe smoking is amplified by the mounting evidence of its addictive and harmful nature. Similar to cigarette smoking, accumulating evidence suggests that waterpipe smoking can lead to dependence, and many of the known smoking-related diseases such as lung cancer, oral cancer, esophageal cancer, cardiovascular disease, and low birth weight (Waziry, 2016). Waterpipe smoking has rapidly become a national public health problem that is likely to escalate and urgently requires solutions.

Unlike cigarette smoking that involves only the cigarette, waterpipe smoking is a multi-component tobacco use method that involves three main parts, the waterpipe tobacco, the heating source (charcoal), and the device (hose, mouthpiece, base, and liquid). Users inhale through the mouthpiece, drawing smoke that heated by charcoal and passes through the tobacco then through water. Partially attributed to the “filtering” effect of passing tobacco smoke through water, many consider waterpipe smoking to be a safer alternative to cigarette (Heinz et al., 2013; Sutfin et al., 2011). In addition, given the unique social nature of waterpipe smoking, the spread of waterpipe establishments (i.e., hookah café, lounge, or bar) helped introduce and normalize the practice (Maziak, 2015). Waterpipe smoking session lasts for one hour on average, which makes it optimal for social engagement with friends and family in the café setting where it is treated as a central element of social gatherings (Akl et al., 2015). Benefiting from lax or absent regulations, the number of these establishments in the US increased dramatically from 200 to 300 in 2007 to over 1,690 in

2014 (American Lung Association, 2007; Primack et al., 2012; Kates et al., 2016). Almost 50% of waterpipe users in the US smoke their first waterpipe in waterpipe establishments (Ward et al., 2007), and more than 30% of current waterpipe users practice the habit in this setting (Sutfin et al., 2011). Waterpipe smoking among college students was associated with the presence of these establishments within a 10-mile radius from university campus (Salloum et al., 2015). In addition, waterpipe establishments have a considerable presence in the internet and social media that may contribute to its proliferation (Salloum, 2016; Salloum et al., 2015). In a qualitative assessment of 144 waterpipe establishments' websites in the US, promotion of waterpipe tobacco flavor, product quality, and the cultural and social aspect of waterpipe use were very common (Primack et al., 2012). More importantly, most of these websites propagated popular myths about waterpipe. For example, some websites directly posted information stating that waterpipe smoking is milder or safer than cigarettes, and tobacco-related warning messages appeared on less than 1% of these websites (Primack et al., 2012). Therefore, waterpipe establishments represent a unique setting for waterpipe regulation that is not exist in other tobacco forms. A critical issue that has not been investigated yet and is highly important to guide waterpipe policy and regulation efforts is customers' perceptions about waterpipe establishments and waterpipe products.

In the new era of online connectivity, public and social Internet forums such as Yelp (<http://www.yelp.com>) allow businesses to promote themselves online, and at the same time allow individuals to rate these businesses and share their experience by providing feedback through written reviews. These reviews provide a unique low-cost mode to obtain instantaneous, honest and public feedback from waterpipe establishments' customers which could allow more elaborate and timely data than traditional surveys (Smith & Lipoff, 2016). Therefore, with a focus on implications for waterpipe regulation, the purposes of this study were to: 1) describe waterpipe establishments' characteristics and their online marketing practices; 2) conduct a systematic and comprehensive qualitative assessment of their online customers' reviews on Yelp to gain insight into customers' positive and negative perceptions about waterpipe establishments and waterpipe products (tobacco, device and accessories, charcoal); and 3) identify features that are most important to customers. To our knowledge, the content of online reviews for waterpipe establishments has not been explored despite their high visibility on the internet. This information can guide waterpipe control efforts in the US by identifying and prioritizing policy and regulation based on feedback from potential waterpipe consumers.

Methods

Study setting

Founded in 2004, Yelp's website (Yelp.com) is a free online platform and social networking site where businesses can promote themselves online and customers can rate these businesses on a scale from 1 (low) to 5 (high) stars by posting a written review of their experience. With more than 127 million individual reviews, Yelp is ranked as the 33 most frequently visited website in the US (Yelp, 2017). Among other rating websites, Yelp was chosen because it was proved to be a powerful public health tool that allows for the investigation of various trends and characteristics of tobacco products (Cawkwell et al.,

2015; Primack et al., 2012). For example, conducting searches in Google Maps, Yelp, and Yellow Pages to identify listings of e-cigarette vape stores in Florida has shown that the accuracy of online results was the highest for Yelp (77.6% vs. 53.0% for Google) (Kim, 2015). Yelp was also a powerful source to investigate waterpipe establishments' business characteristics and the growth in hookah bars in new York city (Cawkwell et al., 2015; Joudrey et al., 2016). More importantly, Yelp use is particularly high among younger adults ages 18–34 (36.9%) and college students (59.7%) (Yelp), a high risk groups for waterpipe smoking (Hyland et al., 2015).

Data collection

In June 2016, two investigators from our research team conducted an online search on Yelp to identify waterpipe establishments in Miami, Florida. Because these data are publicly available, the project was deemed by the University of Miami Institutional Review Board to be exempt from review according to 45 CFR 46, Subpart A (the Common Rule) of the Federal Policy for the Protection of Human Subjects. Miami was chosen as a case study city because it is a substantially large catchment area with a population of more than 5 million, and waterpipe smoking prevalence in Florida is among the highest in the US (Salloum et al., 2015). In addition, as a major destination, Miami has many waterpipe cafés/bars that makes it an optimal location to study waterpipe smoking. Specific search terms included hookah café, hookah bar, hookah lounges, and best hookah in Miami. The search generated a list of 225 establishments, of which, 145 were classified as “Hookah Bar” or “Tobacco Shop” according to their stated designation. These searches were deemed sufficient after additional similar terms did not yield further sites that met criteria. We manually collected data on the overall rating and number of reviews for each establishment. To be included in the study, waterpipe establishments should have at least five reviews ($n = 87$) and a functioning link to a website ($n = 49$). Given the large number of reviews for each establishment (range from 1 to 200+), it would not be possible to include all these establishments and their reviews as the coding would be prohibitively time-consuming. Instead, we opted to randomly select a sample of 24 establishments from the final list ($n = 49$) of the waterpipe establishments stratified by Yelp rating, because review themes may differ by the establishment Yelp rating (Kilaru et al., 2016). Six establishments were selected in each of four strata based on their Yelp rating: excellent (5 stars), good (4 to <5 stars), fair (3 to <4 stars), and poor (<3 stars). Although the sample size of the included establishments was small ($n = 24$), our plan was to keep including reviews in the study until our analysis reached consensus thematic saturation.

Data were extracted in two steps. In the first step, we followed the website link provided for each establishment to collect information on their characteristics and their online marketing practices including: the establishment designation (e.g., lounge, café, bar, dance club); statements describing the atmosphere (e.g., such as relaxing, traditional, modern); served items (e.g., alcohol/non-alcoholic drinks, food); promotions (e.g., happy hour, special events); availability of other tobacco products (e.g., e-cigarettes, cigar, cigarettes); online waterpipe menu (e.g., list of tobacco flavors, statement on age restriction, prices, innovative design, special discounts, charcoal); links to social media (e.g., Facebook, Twitter), and price range based on dollar sign (\$: cheap, :moderate, : moderate, \$: expensive, or : very expensive).

In the second step, we searched customers' reviews content for each establishment for keywords related to waterpipe products and its use (e.g., a description for waterpipe tobacco flavors, device, charcoal, or price) to be sure that these reviews were written by interested potential waterpipe consumers. When a relevant content was found, the entire thread was copied and examined for thematic analysis (Bondy, 2010). Selected reviews were then separated into high-scoring (4 star) and low-scoring (<4 stars) categories. To maintain a balanced sample of reviews from each establishment, we select the first positive and first negative relevant reviews for each establishment, and we repeated the process conducting another round of data collection until our analysis reached consensus thematic saturation. Selecting the first reviews (last posted reviews) eliminated potential selection bias from sampling older reviews from establishments that might have been in business longer, since these may not represent current customer perceptions. In addition, selecting equal number of reviews from each establishment in each data collection round eliminated the bias of selecting more reviews from those who had larger number of reviews. In total, 106 reviews were included in the study, which is an average of four reviews per establishment. Therefore, we think that our selection criteria were sufficient to control selection bias, while providing adequate sampling to provide insights into a range of themes that are consistent with previous research. Finally, cross-checking information from different perspectives (positive and negative) has the potential to improve the internal validity of our data. This method is known as the triangulation, a commonly used strategy for verifying accuracy and improving the internal validity in qualitative research (Patton, 1999).

Coding of themes

Using grounded theory principles, three investigators (ZBT, OO, TA) worked together to become familiar with the data and generate a coding frame. Through an iterative, line-by-line reading of the entire set of reviews, and using a two-step open coding process, the team identified and reached consensus on a list of codes that corresponded to emerging themes associated with high- and low-scoring (Crabtree, 1999). First, analytic codes were based on primary thematic areas of interest (e.g., waterpipe establishment's atmosphere, staff and service, waterpipe tobacco, device, and charcoal, etc.). This first step of coding organized the text of reviews into primary themes. In the second step, the coding team further identified sub-themes within each of the primary areas of interest. A codebook was created in which each primary and sub-theme were listed and defined (Table 2). The final coding scheme consisted of 32 codes with 324 incidences divided into two main categories: (1) positive comments that presented factors that attracted customers (n = 186 incidence), and (2) negative comments that presented factors that averted customers (n = 138 incidence). Each category included eight themes, four were related to the waterpipe establishment, and the other four themes were related to the waterpipe. Themes that were related to the establishment included: (1) the establishment's atmosphere (relaxing seating, clean, comfortable, music, chill, games), (2) staff and service (friendly staff, fast service, opening extra hours), (3) other served items (alcoholic drinks, food), and (4) clientele (college students, women, Middle Eastern, kids). The other four themes that were related to the waterpipe included: (1) tobacco flavor (great flavor, wide selection of flavors), (2) the price of waterpipe (reasonable, special offer, expensive), (3) waterpipe device/accessories (top of the line, innovative, short hose), and (4) the charcoal (organic, long-lasting, fast light-up).

The entirety of the data was double-coded to determine reliability. Agreement for coding themes were substantial ($K = 0.92$). Discrepancies in coding were resolved by discussions between the three investigators to ensure consensus. Coding was continued until reaching consensus thematic saturation, a validated qualitative measure indicating that no novel themes were emerging from the data (Boyatzis, 1998).

Statistical analysis

For the first aim, we ran descriptive statistics on waterpipe establishments' characteristics and their online marketing practices using SPSS vr. 21 (Table 1). For the second aim, we used an inductive qualitative method to code and identify key themes associated with positive and negative customers' experiences. Thematic analysis was completed upon reaching saturation (Table 2). To rank the most important waterpipe establishments' features/characteristics to customers, we assessed the frequencies and proportions of codes that involved summing the number of counts for each code and computing the proportion of all reviews that contained the code manually (Crabtree, 1999; Miller, 1992) (Table 3).

Results

Online marketing strategies of waterpipe establishments

A description of online marketing strategies is provided in Table 1. The selected 24 establishments had a total of 1,862 individual reviews. Among the 24 establishments, almost half (45.8%) classified their business as a bar. Besides serving the waterpipe, 16.6% sold cigars, 4.1% sold cigarettes and 4.1% sold waterpipe supplies. On the waterpipe menu, only 16.6% listed age restrictions, and tobacco flavor was grouped into regular (70.8%), premium (62.5%), make-your-own (25.0%), or no flavor (4.1%). Promotions used by these establishments were happy hour (50.0%), entertainment and special events (12.5%), ladies night out (16.6%), and college night (8.3%), and 41.6% posted photos of young people. All establishments had links to social media such as Facebook (95.8%), Instagram (83.3%), and Twitter (70.8%). Prices were classified based on Dollar's signs as \$/cheap (12.5%), /moderate(79.1%),or/moderate (79.1%), or \$ \$expensive (4.1%).

Yelp online customers' reviews

A total of 106 reviews were included in the study, with a median of four reviews per establishment. The number of reviews that was included in the analysis is considered sufficient for qualitative research (Creswell, 2009). Eight distinct qualitative themes were identified in the two main categories (positive comments, negative comments). Four themes were related to the establishment and four themes were related to the waterpipe. These themes are summarized in Table 2 and reported below with quotations from the reviews to give the reader a clearer sense of common themes and patterns.

Themes related to the waterpipe establishments Waterpipe establishments atmosphere.—The most common positive themes related to atmosphere were relaxed seating, modern and clean look, and good location, having special entertainment activities such as chill music, sports TV channels, hosting special events such college night and ladies

night out, and open late at night. On the other hand, customers' negative comments and complaints were mainly related to loud/bad music being played and the rundown ambience.

+*"If you want to really have a great time be sure to check out the college night on Thursdays and Black Light Event on Fridays."*

-*"I was disappointed by the run-down ambience: matted-down couches, dirty generic Ikea tables, and no music playing."*

Staff and service.—Positive comments about the staff included friendly staff, knowledgeable with waterpipe and fast service. Negative comments about the staff most commonly included being unfriendly and providing slow service.

+*"Always they had a guy in charge of hookahs changing the coal when is needed and ask us if it was ok or not."*

-*"Worst Hookah Lounge! Bad and super slow customer service."*

Other served items (food and alcohol).—Having a wide and good selection of alcoholic drinks and good food were important to customers, while having limited variety or bad quality of drinks and food were noted negatively by customers.

+*"There's also a great selection of beer, wine, and sodas to choose from."*

-*"Food was terrible ... but what do you expect from a hookah cafe?"*

Clientele.—Customers commonly cited the presence of attractive women, college students, and those of Middle Eastern nationality as positive attributes of the waterpipe establishments. Negative customer comments concerned the presence of children (under legal age) smoking waterpipe.

+*"Most people are Middle Easterners, but others can be seen here. They also seem to be more liberal (good thing), open to women and mixed youth - something I don't see much in traditional places."*

-*"They let a bunch of 15 year olds in."*

Themes related to waterpipe

Tobacco flavors.—Customers highly endorsed the availability of a wide selection of flavored tobacco and good tasting flavors (described as refreshing). Customers also positively mentioned the availability of waterpipe tobacco for sale at the establishment. Negative comments about the tobacco were related to the availability of limited variety of flavors or bad tasting flavors (described as plastic).

+*"OMG the lemonade mojito flavor is to die for! Absolutely refreshing and the perfect mix for hookah."*

+*"Don't forget to pick up your favorite flavor on your way out for your smoking needs at home."*

– “We ordered the blueberry gum flavor, which had zero flavor. It was a waste of \$12.00.”

Price.—Reasonable price or discounts for special events was positively evaluated. Price was noted as affordable/reasonable when it ranged from \$10 to \$35, and considered to be high when it was \$40 and above. Some customers related the high price to the location of the lounge (tourist area) and the attractive setting (chic or high class). Customers endorsed offers and discounts for special events and stated that sharing the waterpipe with friends helped them reduce the cost.

+ “*SUPER low prices! \$30 gets you 2.5 hours of smoke.*”

– “*Nice place but the prices kill it (\$43 profit for passing us a hookah).*”

+ “*You can try the fresh watermelon base (\$75) with a cantaloupe, apple, or pineapple top (\$40). Expensive, I agree! But I have to say though, it’s the best hookah in South beach.*”

+ “*As of right now the price is \$15 for the hookah and one person, and then an extra \$5 charge for every extra person.*”

Device and accessories.—Customers endorsed innovative devices by stating that it is top-of-the-line, bowls made out of fruit (e.g., grapefruit, watermelon), or special hose (e.g., freeze hose). On the negative side, customers gave negative reviews when device were old, dirty or had a short hose.

+ “*The hookah is truly unique, the bowl which holds the coal and shisha are not your typical porcelain bowls but a grapefruit! It adds a flavor and lasts forever!*”

+ “*Bazooka (freeze) hose is an extra \$5 but well worth it for the amount of smoke you get.*”

– “*The hookah wasn’t washed out properly and the hoses were dirty.*”

Charcoal.—Offering organic or long-lasting charcoal were noted as positive factors, while using quick light-up or small disc (short-lasting) charcoal was noted as a negative factor. Complaints were mainly related to the chemical/bad taste from quick light-up charcoal.

+ “*Quality hookahs with Egyptian clay blows and coconut charcoal!*”

– “*Terrible hookah. They use quick light coals, chemical flavor, yuck*”

Ranking of the most important attributes that customers’ value

In the eight identified themes, 324 incidences of subthemes were coded (n = 186 incidence for positive comments, and n = 138 incidence for negative comments) (Table 3). Regarding the establishment, the most common positive attribute for customers was the atmosphere (34.9%) while the most common negative factors concerned unfriendly staff or slow service (26.8%). Regarding the waterpipe device, the most common positive factor was the wide selection of flavors (15.1%), while the most common negative factors were the low quality of the charcoal (15.8%) followed by the high price (15.1%).

Discussion

Given the unique social nature of waterpipe smoking, waterpipe establishments are a unique and important setting for waterpipe control and regulation. Our results show that the main page of the establishments' websites was mostly used to promote the pleasant/ relaxing atmosphere and special events and discounts for waterpipe (e.g., ladies night out, happy hours), while the online waterpipe menu was used to promote the waterpipe products including the wide selection of tobacco flavors, innovative accessories (e.g., fruit bowl, modern device, freeze hose), and organic or healthy charcoal. Further, our thematic analysis of Yelp customers' reviews shows that customers' positive perceptions to waterpipe echo messages promoted by waterpipe establishments. Customers highly endorsed the establishment's pleasant and relaxing atmosphere, special events and discounts, the wide selection of flavored tobacco, innovative devices/accessories, reasonable price, and the quality of charcoal. Among these, the wide selection of tobacco flavor was the most positive reported factor by customers, while the bad quality of the charcoal followed by the high price were the most negative reported factors. Regulatory strategies that have proven to be successful with cigarettes (e.g., banning flavored tobacco, increasing the price) seem to be applicable to control waterpipe. However, regulatory framework for waterpipe should address its complex context including the venue (i.e., online advertisement, online menu), the tobacco mixture, the device/accessories, and the charcoal (Salloum, 2016). For example, given the wide reach and accessibility of online advertising and the potential for health claims to be misinterpreted (Sethuraman et al., 2011), waterpipe establishments' online advertisements need to be closely monitored and regulated to start changing the norms about waterpipe use safety (Salloum, 2016). In addition, other regulations such as requiring age restriction, health warning labels, disclosure of actual toxicants yield, and banning of deceptive descriptors (e.g. natural, healthy) should be extended beyond the tobacco to include the physical establishment (e.g., walls, front door), the websites, the menu (both online and instore), the device and accessories, and the charcoal.

Consistent with prior research exploring the social and environmental context of waterpipe smoking and its marketing using social media data (e.g., Instagram, Twitter), our results show that most waterpipe related reviews convey positive sentiment (Allem, 2017a, 2017b). Waterpipe establishments promote online their pleasant relaxing atmosphere, special events and discounts, and variety and quality of waterpipe product, and their customers' reviews echo these messages. Obviously, much of the promotions were targeting young adults and females through the advertisement of cool atmosphere that features several cultural and social activities that are interesting for these groups (e.g., watching sport games, ladies night-out, college nights). Studies have been shown that exposure to online advertisements could be particularly effective in influencing behavior and increasing tobacco consumption (Cohen et al., 2001; Sethuraman et al., 2011). The advertising potential of the internet has not gone unnoticed in the US. With the passing of the Family Smoking Prevention and Tobacco Control Act in June, 2009, regulatory approaches related to the prohibitions on tobacco advertising, marketing, and promotion were conferred to the US Food and Drug Administration (FDA) and extended to include the internet in addition to the television and radio, with a particular emphasis on restrictions to decrease the marketing and appeal of

tobacco products to youth and females (Husten & Deyton, 2013). As for cigarettes, monitoring and applying restriction on waterpipe establishments' online advertisement and promotions seems to be an important domain to control waterpipe smoking (Cohen et al., 2001; Richardson et al., 2015; Salloum, 2016). Beginning in 2018, the FDA deeming rule requires that a single text message "WARNING: This product contains nicotine. Nicotine is an addictive chemical" be displayed on waterpipe tobacco product packaging and advertising (FDA, 2017). Requiring this warning to be displayed on the websites of waterpipe establishment has the potential to increase customers' awareness about the risk of waterpipe smoking and start to change the positive social norm.

Our study is the first to show that the online waterpipe menu was heavily used to promote and advertise waterpipe products (e.g., wide selection of tobacco flavors, innovative devices and hoses, and organic charcoal). Therefore, regulating the waterpipe menu to communicate the risk of waterpipe smoking represents another opportunity for waterpipe control. For example, the online waterpipe menu could be regulated by disclosing toxicants content and yield (e.g., nicotine, tar) of waterpipe tobacco products, applying age restriction, as well as placing health warnings about the risks of waterpipe smoking (Salloum, 2016). As an example, we illustrated in Figure (1) two waterpipe menus, one was non-regulated and was used by one of the waterpipe establishments that was included in our study, and one was regulated. The non-regulated menu is colorful, has photo of fresh fruits and attractive woman, and expresses deceptive statements such as "You can have your tobacco served out of a fresh fruit head," "we use Al-Fakher and Starbuzz tobacco that are made from real fruit," and "choose your healthy hose, or natural coconut shell." In contrast, the regulated menu is written in black and white, has a statement in the top for age restriction "18 years and up only/ must have ID", and has a health warning message in the bottom "Tobacco smoking is a proven cause of lung cancer and heart disease."

Consistent with previous research, few waterpipe establishments posted statements about age restrictions, which is corroborated by customers' report of these venues allowing children as young as 15 years old to smoke waterpipe (Joudrey et al., 2016; Primack et al., 2012). In Florida and most other States, it is illegal to sell waterpipe products to any person under the age of 18 years old (Legal Resource Center for Public Health Policy, 2017). It is important to enforce and monitor compliance with this law. For example, requiring that waterpipe establishments include an age restriction statement indicating that customers should be at least 18 years old on the websites, the physical establishment (e.g., walls, front door), or on the menu (both online and in-store) will remind people of the age restriction and begin to change the misperception that waterpipe is safe.

The availability of wide variety of flavored tobacco was the most noted positive factor for waterpipe establishment's appreciation. Several lines of evidence point to the salience of flavored waterpipe tobacco in fueling the global waterpipe epidemic, especially among youth (Akl et al., 2015; Feirman, 2015; Maziak, 2015; Rastam et al., 2004). While traditional tobacco is associated with harsher taste and smell, flavored tobacco produces smooth smoke with a pleasant aroma (Nakkash & Khalil, 2010). Recent data from the CDC suggest flavoring as a contributing factor for the recent increase in waterpipe smoking among US youth (Corey et al., 2015). In an online survey of 3,447 students from 8 colleges

in North Carolina, 90% of students who smoked waterpipe used flavored tobacco (Salloum et al., 2015; Sutfin et al., 2014). Qualitative testimonies as well indicate that flavored tobacco encourages waterpipe use by supporting the misconception of being safer alternative to cigarettes, especially among young adults (Griffiths et al., 2011). Consistent with these studies, our results reinforce the importance of flavor for waterpipe marketing, as well as a target with a great potential for regulation (Joudrey et al., 2016). Recently, despite the FDA's announced intention to prohibit flavors in cigars with the exception of tobacco and menthol, waterpipe tobacco was not included (US Food and Drug Administration, 2016). More research is needed to provide evidence on the effects of limiting or eliminating flavor varieties on waterpipe smokers' dependence, satisfaction, harm perception, and exposures to toxicants and help considering waterpipe flavor regulation by the FDA.

Another important factor endorsed by customers was the innovative design of the device and its accessories (e.g., using cored pineapple or watermelon). This is consistent with prior research indicating that design innovations may also contribute to waterpipe popularity by increasing its marketing potential, especially among trend-seeking smokers (e.g., women and young adults) (Nakkash, 2011). Innovations in cigarette design (e.g., packaging, length, colors) have been strategic to the tobacco industry's success in attracting new customers (Carpenter et al., 2005). This is also an important regulatory area, where enforcement of product standards and attributes can minimize the potential for targeting youth, women, and other vulnerable populations. For example, prohibiting the use of any device other than a traditional waterpipe or requiring health warning labels on the device could potentially reduce the allure of this method of smoking (Islam, 2016; Jawad et al., 2015).

Regarding waterpipe establishments' attributes that led to negative evaluations, bad quality of charcoal used to heat the waterpipe was the most negative reported factor by customers. Main complaints were related to the bad chemical test when using the fast light-up charcoal and the short smoking session when using small disk charcoal that required frequent replacement. Evidence suggests that charcoal used to heat waterpipe tobacco is the main source of exposure to several toxicants, including carcinogens (e.g., carbon monoxide, polyaromatic hydrocarbons) (Monzer et al., 2008). The importance of charcoal to waterpipe establishments' customers, in light of its health damaging effects, highlights a unique aspect of the waterpipe that will require the development of novel regulatory approaches (Shihadeh et al., 2015). For example, regulation such as requiring health-warning labels, disclosure of actual toxicants yield, and banning of deceptive descriptors (e.g. natural, healthy) should be extended beyond the tobacco to include charcoal.

The high price was the second most reported negative factor by customers. Research related to price among cigarette smokers has demonstrated that higher prices were associated with lower demand and consumption, particularly among young people (Bader et al., 2011; van Hasselt, 2015). Although, pricing of waterpipe products generally is not equivalent to their pricing in waterpipe establishments setting, general increase in the price of waterpipe products will likely increase the prices of waterpipe offered in waterpipe establishments across the board, and lower the demand for waterpipe (Salloum, 2016).

This study has several limitations. First, as with all qualitative research, these findings are exploratory and hypothesis generating. These reviews reflect a small sample of the total waterpipe establishments' customers. However, our intent was not to validate the representative accuracy of these reviews but rather to derive insight from the customer-generated content that these reviews provide on a public forum. Our data were sufficient to provide insights into a range of themes, and based on available epidemiological data it is likely that general appeal of waterpipe establishments and the profile of their clientele are likely not to be very different for different locations (Akl et al., 2015). Another possible limitation is investigator bias (e.g., personal opinion) during the coding and analysis of themes. However, we minimized this bias by having three researchers extract and code important themes, and by using a team analysis system. Finally, by focusing on the comparison of high-scoring and low-scoring reviews, we have attempted to maximize internal validity (Smith & Lipoff, 2016).

In summary, waterpipe establishments are an important and unique setting for waterpipe control and regulation. Waterpipe establishments' online advertisements and promotions should be monitored and restricted. The availability of flavored tobacco, innovative device/accessories, affordable pricing, and charcoal quality are important domains for waterpipe establishments' policy and regulation. Most regulatory strategies that have proven to be successful with cigarettes seem to be applicable to control waterpipe establishments. However, regulatory framework for waterpipe establishments should address the complex context of waterpipe including the tobacco mixture, the device/accessories, charcoal, and the venue (i.e., website, online menu).

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TA originated the study. She was involved in conception, analysis, interpretation of data, and drafting and reviewing multiple drafts of this manuscript. ZBT, DS, ECR and OO conducted the data collection, and participated in the analysis and interpretation of data. KW, WM, and RGS were involved in conception and interpretation of data and participated in revising and editing the manuscript. All authors read and approved the final version of the paper. The authors alone are responsible for the content and writing of the paper. The authors confirm that this submitted manuscript has not been published anywhere, in whole or in part, previously and it is not simultaneously being considered for any other publication. Approval from all coauthors was obtained prior to submission.

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Figure 1.

Example for how the waterpipe menu can be regulated. (A) The non-regulated menu is colorful, shows a photo for an attractive women, expresses deceptive statements (fresh fruit head, healthy hose, smoke is filtered), and introduces the habit for customers by providing a detailed instructions on steps needed to get the best Hookah experience. (B) The regulated menu is written in black and white (no colorful fruits or attractive photos), has a statement for age restriction “18 years and up only / must have ID”, and has a health warning message “Tobacco smoking is a proven cause of lung cancer and heart disease.”

Table 1.

Characteristics and online marketing of waterpipe establishments (n = 24).

Characteristics	N = 24	%
Description		
Have an outdoor seating	12	50.0
Identify themselves as a “Bar”	11	45.8
Identify themselves as a “Dance club”	2	8.3
Identify themselves as a “Tobacco shop”	3	12.5
Identify themselves as a “Restaurants”	2	8.3
Posted photos for traditional look seating	6	25.0
Posted photos for modern look seating	7	29.1
Posted photos for young people	10	41.6
Served		
Food	16	66.6
Alcoholic beverage	17	70.8
Non-alcoholic beverage (only)	3	12.5
Sold items		
Waterpipe supplies	1	4.1
Cigarettes	1	4.1
Cigar	4	16.6
Waterpipe menu ^a		
Regular flavors	17	70.8
Premium flavors	15	62.5
Make your own mix	6	25.0
Other flavor ^b	3	12.5
Base fill addition (juice, milk, alcohol)	2	8.3
Traditional Shisha (no flavor)	1	4.1
Age restriction	4	16.6
Promotions		
Happy hour (cheaper price, free refill, offers on flavors)	12	50.0
Entertainment and special events (birthdays, new year, valentine day) ^c	3	12.5
Ladies night out	4	16.6
College night	2	8.3
Modern design glass hookahs	1	4.1
Social media		
Facebook	23	95.8
Instagram	20	83.3
Twitter	17	70.8
YouTube	2	8.3

Characteristics	N = 24	%
Others	5	20.8
Price		
\$ (cheap)	3	12.5
\$ \$ (moderate)	19	79.1
\$ \$ \$	0	0
\$ \$ \$ \$	1	4.1

^aThree establishment did not have a menu.

^bNew bold flavors, frozen hookahs.

^cEntertainment: Art shows (Djs, Live music, Comedy, Poetry, Jukebox, Belly dancing, Karaoke), video games.

Table 2.

Thematic analysis of Yelp online customer reviews (n = 106) of waterpipe establishments in Miami, Florida, 2016. Examples of positive and negative reviews.

	Positive reviews ^a	Negative reviews ^b
Venue related themes		
Atmosphere	<ul style="list-style-type: none"> • It is so relaxing laying back and enjoying the smooth smoke as the waves crash in and electronic music plays. • The lounge has a cool, modern touch to it and I love the jukebox!! I definitely recommend!! 	<ul style="list-style-type: none"> • I was disappointed by the run-down ambience: matted-down couches, and no music playing. • Hot as hell, they need ventilation. • WORST HOOKAH LOUNGE! Bad and super slow customer service.
Staff	<ul style="list-style-type: none"> • Great staff, very knowledgeable of their Hookah products. • Always they had a guy in charge of hookahs changing the coal when is needed and ask us if it was ok or not. • They stayed open until 3:30 am for us and were very hospitable! 	<ul style="list-style-type: none"> • Worst. Hookah. Ever!!!! Are u kidding me? Order your hookah and carry it to your table yourself? Walk up and order drinks instead of a waitress? If I wanted to have no service, I would stay at home and make my own hookah.
Other served items (food and alcohol)	<ul style="list-style-type: none"> • There's also a great selection of beer, wine, and sodas to choose from. 	<ul style="list-style-type: none"> • Average drinks. Will not be coming back." • Alcoholic drinks are not allowed.
Clientele	<ul style="list-style-type: none"> • We also had the pita/hummus appetizer and it was delicious, so that suggests the food is okay too. • Most people are Middle Easterners, but others can be seen here. • They also seem to be more liberal (good thing), open to women and mixed youth - something I don't see much in traditional places." 	<ul style="list-style-type: none"> • Food was terrible ... but what do you expect from a hookah café? • They let a bunch of 15 year olds in. • There were five kids with two hookahs in the corner.
Waterpipe related themes	<ul style="list-style-type: none"> • OMG the lemonade mojito flavor is to die for! Absolutely refreshing and the perfect mix for hookah. 	<ul style="list-style-type: none"> • They have no menus for the hookah. My friend had to go to the back room to choose a hookah flavor.
Tobacco flavors	<ul style="list-style-type: none"> • Two brands of tobacco is offered, with Starbuzz being the better/cleaner one. • Don't forget to pick up your favorite flavor on your way out for your smoking needs at home." 	<ul style="list-style-type: none"> • Hookah flavors/menu is not very big. • We ordered the blueberry gum flavor, which had zero flavor. It was a waste of \$12.00.
Price	<ul style="list-style-type: none"> • SUPER low prices! \$30 gets you 2.5 hours of smoke. • They have a great special on weekdays where the hookah is only \$8 vs \$20. • You can try the fresh watermelon base (\$75) with a cantaloupe, apple, or pineapple top (\$40). Expensive, I agree! But I have to say though, it's the best hookah in South beach." • As of right now the price is \$15 for the hookah and one person, and then an extra \$5 charge for every extra person. 	<ul style="list-style-type: none"> • Nice place but the prices kill it (\$43 profit for passing us a hookah). • Ugh... overpriced. 120 bucks for hookah and 6 drinks.
Device/accessories	<ul style="list-style-type: none"> • The hookah is truly unique, the bowl which holds the coal and shisha are not your typical porcelain bowls but a grapefruit! It adds a flavor and lasts forever! • Bazooka (freeze) hose is an extra \$5 but well worth it for the amount of smoke you get. • I also read somewhere that the maximum is 3 people per hookah but I believe they are pretty lax on that rule because I saw groups of 5 and 6 sitting around one hookah. 	<ul style="list-style-type: none"> • The hookah wasn't washed out properly and the hoses were dirty.
Charcoal	<ul style="list-style-type: none"> • Quality hookahs with Egyptian clay blows and coconut charcoal. • Organic and natural charcoal. 	<ul style="list-style-type: none"> • Quick light coals instead of natural coconut coals which distorted flavor a bit. • Terrible hookah. They use quick light coals, chemical flavor, yuck. • The charcoal's are literally the size of a dice and do not create a good hookah smoke.

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^aReviews with 5 or 4 stars.
^bReviews with 1, 2, or 3 stars.

Table 3.

The most positive and negative attributes related to customers' demand based on subthemes incidence in the thematic analysis.

Themes	Positive comments 53 reviews		Negative comments 53 reviews	
	N = 186 ^a	%	N = 138 ^a	%
Factors related to the establishment				
Atmosphere				
Nice and relaxing sitting, clean environment versus awkward, not comfortable, need ventilations	30	16.1	11	7.9
Nice music, chill, TVs, Games versus loud or bad music	27	14.5	9	6.5
Open for extra hours ^b	8	4.3	—	—
Staff and service				
Friendly staff and knowledgeable versus not friendly and rude	28	15.1	20	14.5
Fast service versus slow service	7	3.7	17	12.3
Customers				
College students	2	1.1	3	2.1
Women	2	1.1	1	0.7
Kids	—	—	2	1.4
Middle Eastern/traditional	1	0.5	—	—
Other served items				
Good and great varieties of alcoholic drinks versus bad drinks	10	5.3	6	4.3
Good food vs. bad food	9	4.8	7	5.1
Factors related to the waterpipe				
Tobacco flavors				
Great or wide selection of flavors versus bad and limited selection flavor	28	15.1	15	10.9
Price				
Reasonable price versus overpriced ^c	19	10.2	18	13.0
Have special offers versus don't honor their offers ^d	3	1.6	3	2.1
Waterpipe devices and accessories				
New, clean, or top of the line versus old or dirty	8	4.3	4	2.8
Charcoal				
Last for long time versus small size coal (last for very short time)	3	1.6	11	7.9

Themes	Positive comments 53 reviews		Negative comments 53 reviews	
	N = 186 ^d	%	N = 138 ^d	%
Organics coal (good test) versus quick light up coal (bad test)	1	0.5	11	7.9

^aNumber of incidence for subthemes.

^bOpen till mid night or during the week.

^cPrice ranged from \$7 to \$30.

^dFree refill, free charcoal, or group price.