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U.S. Hookah Tobacco Smoking Establishments Advertised on the Internet

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Abstract

Background—Establishments dedicated to hookah tobacco smoking have recently proliferated and helped introduce hookah use to U.S. communities.

Purpose—To conduct a comprehensive, qualitative assessment of websites promoting these establishments.

Methods—In June 2009, a systematic search process was initiated to access the universe of websites representing major hookah tobacco smoking establishments. In 2009–2010, codebook development followed an iterative paradigm involving three researchers and resulted in a final codebook consisting of 36 codes within eight categories. After two independent coders had nearly perfect agreement (Cohen's $\kappa=0.93$) on double-coding the data in the first 20% of sites, the coders divided the remaining sites and coded them independently. A thematic approach to the synthesis of findings and selection of exemplary quotations was used.

Results—The search yielded a sample of 144 websites originating from states in all U.S. regions. Among the hookah establishments promoted on the websites, 79% served food and 41% served alcohol. Of the websites, none required age verification, <1% included a tobacco-related warning on the first page, and 4% included a warning on any page. Although mention of the word *tobacco* was relatively uncommon (appearing on the first page of only 26% sites and on any page of 58% of sites), the promotion of flavorings, pleasure, relaxation, product quality, and cultural and social aspects of hookah smoking was common.

Conclusions—Websites may play a role in enhancing or propagating misinformation related to hookah tobacco smoking. Health education and policy measures may be valuable in countering this misinformation.

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Introduction

While cigarette use has declined substantially over the past 2 decades,¹⁻³ smoking tobacco with a hookah (water pipe, narghile, or shisha-pipe) is an emerging trend in the U.S.⁴⁻⁸ The WHO estimates that one hookah tobacco smoking session delivers 50–100 times the smoke volume of a single cigarette.^{9,10} Further, the smoke from one hookah session contains about 40 times the tar,^{11,12} 30 times the carcinogenic polycyclic aromatic hydrocarbons,¹³ two times the nicotine,^{11,12} and 10 times the carbon monoxide^{11,12,14} of the smoke from a single cigarette. Hookah smokers are exposed to these toxicants when they smoke,¹⁵⁻¹⁹ and blood nicotine levels of daily hookah tobacco users are similar to those of an individual who smokes 10 cigarettes per day.^{11,12,17} These data are consistent with preliminary reports linking hookah tobacco smoking to cancer, cardiovascular disease, decreased pulmonary function, and nicotine dependence.²⁰⁻²³ Despite these reports, many individuals continue to perceive hookah tobacco smoking as having low potential for harm and addictiveness.^{4,6,7,24,25}

Although definitive population-based studies are lacking, localized samples suggest ever-use prevalence of 20%–40%.^{4,6,24} Additionally, hookah tobacco use may be increasing.^{4,6,24} One reason is that it may have more aesthetic appeal than cigarette use. The tobacco used in hookahs is generally flavored and sweetened, resulting in a sweet-smelling smoke, and the hookah pipes are often made of intricately carved glass and polished metal.^{9,17,26,27} Another reason may be the recent proliferation of establishments that are dedicated to hookah tobacco smoking and are helping to introduce the practice to U.S. communities.²⁸⁻³⁰ Yet another reason may be the manner in which hookah use is advertised.

In the past, increases in cigarette smoking have often been fueled by well-funded marketing promotions,³¹⁻³³ but this does not currently appear to be the case with hookah tobacco use. Because many experts consider a website to be a crucial element of the marketing of a new business,³⁴ especially if the business targets young and socially connected individuals,²⁹ it may be helpful to determine how many websites are dedicated to advertising hookah smoking establishments and what types of messages they are providing. This information, which has not been previously published, may help researchers and practitioners understand the appeal of hookah use and ultimately help them develop intervention programs to reduce the use of all forms of tobacco consumption. Therefore, the purpose of this study was to conduct a systematic, comprehensive, qualitative assessment of websites advertising hookah tobacco smoking establishments in the U.S.

Methods

Website Search and Sample Determination

To access the universe of websites representing major hookah tobacco smoking establishments, the research team performed a search similar to the type that is commonly used in systematic reviews of the medical and public health literature.³⁵⁻³⁷ In June 2009, two members of the team searched google.com, yahoo.com, and bing.com, because at that time these three search engines accounted for more than 95% of all U.S. searches. Each of these engines utilizes a proprietary algorithm to prioritize websites by factors such as overall traffic, recent traffic, and number of links to other pages. Specific search terms included *hookah*, *hookah bars*, and *hookah lounges*. These searches were deemed sufficiently comprehensive after additional similar terms did not yield further sites that met criteria. For example, although terms such as “water-pipe” and “narghile” are used in the U.S. by researchers and public health practitioners, these terms are not generally used colloquially by promoters.

Both researchers conducted an individual search and recorded the first 20 results found for each term and each search engine (180 results total for each researcher). Selection of the first 20 “hits” is supported in the public health and information science literature.³⁸⁻⁴⁰ Duplicate, irrelevant, and non-U.S. links were removed. This process yielded multiple individual sites as well as 19 hookah bar “directories,” each of which was searched, using a snowball strategy, to obtain additional sites. This yielded 771 hookah tobacco smoking establishments, of which 367 were associated with web links. Researchers assessed each of these 367 links, excluding any website that did not work, did not stand alone, or did not represent a particular establishment. If an establishment had a social networking site (such as MySpace) and a stand-alone site, it was included in the analysis. If the establishment had a presence on only a social networking site, however, it was not included. This is because the aim of the study was to systematically assess sites representing prominent establishments, and prominent establishments, especially those aimed at young adults, almost universally maintain stand-alone websites. This process yielded a final sample of 144 websites (Figure 1).

Codebook Development and Coding Procedures

The qualitative research design included codebook development and coding procedures that were based on grounded theory adapted for medical research by Crabtree and Miller.^{41,42} This qualitative approach to research was selected because it can generate an in-depth understanding of the messages communicated by websites.

Coding procedures were conducted from June 2009 to June 2010. First, two investigators with training in qualitative methods assessed 20% of the sample. Focusing on the text and images provided, they independently searched for emerging key themes. Then they discussed their coding of themes and developed a preliminary manual for coding. After the two investigators and an additional researcher independently used the preliminary manual to code an additional set of websites, they met as a team to address questions and make refinements to the manual. They then developed the final codebook, which contained specific inclusion/exclusion criteria for each code and textual examples of clear and borderline cases.

Two trained coders used the final codebook to independently code all text and images on 20% of the websites. According to the established Landis-Koch framework,⁴³ the two coders had nearly perfect agreement (Cohen’s $\kappa = 0.93$), and the few differences were easily adjudicated with brief discussion, yielding 100% agreement. Because of the high degree of agreement in coding, the two coders were able to divide the remaining websites and complete the coding of these sites independently.

Coding of websites is complex because each site may contain multiple nested pages with embedded images and/or videos and because content may change over time. Therefore, to ensure consistency and facilitate analysis, the researchers saved each site on the day of the search as a portable document file (pdf) for later coding. Using a software package, pdf files were created for the entire website (including photo galleries and videos) for all but 11 sites; for the remainder, screen shots were saved to document site content.

Codes

The final codebook consisted of 36 codes within 8 categories. The first set of 14 codes described the characteristics of establishments in 4 categories of products and activities available. The second set of 22 codes described the content and characteristics of the websites. These codes were also divided into four categories: legal restrictions or warnings, audio stimuli, images, and text. The 12 text codes were further classified as items pertaining

to the promotion of the relative mildness or safety of hookah smoking; to the exotic nature of the ritual of hookah use; to positive sensations associated with the behavior, such as fun, sweet taste, and relaxation; and to the targeting of college students. Because of the importance of whether an item was noted on the first page of the website, which is highly visible, or anywhere on the site, all 22 codes further delineated this information. First-page coding captured all information displayed on the first page of the website, including parts of the page that required scrolling.

Analyses

Analyses, conducted in 2010, used a quasi-statistical qualitative method^{38,39} to assess the proportion of all sites that contained a particular code. Subsequently, synthesis of the findings and the selection of exemplary quotations were guided by the principles of thematic synthesis, in which codes are organized into descriptive and then analytic themes.⁴⁴ This approach was selected because it allowed for both a consideration of the relevance of findings to public health and the need for intervention and an in-depth and open-ended approach to textual and other coded elements.⁴⁴

Results

Characteristics of the Sample

In the sample of 144 websites, hookah establishments were present in all regions of the U.S. Per capita representation (Figure 2) was highest in four western states (California, Nevada, Arizona, and Colorado), two southern states (Florida and Georgia), two midwestern states (Illinois and Indiana), and three states in the mid-Atlantic and northeast (Virginia, New York, and Massachusetts).

Characteristics of the Hookah Establishments

Of the 144 establishments, 114 (79%) served food, 59 (41%) served alcohol, 68 (47%) were full-service restaurants, 53 (37%) offered dancing, and 53 (37%) featured live music. Forty-three (30%) sold hookah supplies, while six (4%) promoted tobacco-free products (e.g., “Hydro Herbal Shisha” and “Soex Herbal Molasses”). Forty-four establishments (31%) promoted Facebook pages, 31 (22%) had MySpace pages, and 22 (15%) had Twitter pages (Table 1).

Characteristics of the Websites

While 21 sites (15%) stated that there was an age requirement to enter the hookah establishment, only two (1%) stated an age requirement to view the website, and no websites actually required age verification (Appendix A, www.ajpmonline.org). Only one website (<1%) contained a tobacco-related warning on the first page, and only six (4%) contained a warning anywhere on the site.

Analysis of audio and image codes (Appendix A) showed that 25 (17%) had some type of music playing in the background and 16 (11%) had Middle-Eastern music playing. On the first page of the website, 97 sites (67%) featured an image of a hookah pipe, while 37 sites (26%) showed an image that had “cultural” significance (such as a belly dancer or a genie’s lamp), 49 (34%) showed an image of people having fun, and 40 (28%) showed an image that was sexually suggestive.

Twenty-three sites (16%) included direct statements suggesting hookah smoking was safer than cigarette smoking (e.g., “Relax without worries of addiction or intoxication”), and 31 (22%) promoted the “mildness” of hookah smoking (Appendix A). Mention of the word *tobacco* was uncommon, appearing on the first page in only 38 sites (26%) and in any

location on 84 sites (58%). Of the 144 sites, 39 (27%) named specific brands of hookah tobacco, with *Starbuzz* being the most common. The exotic nature of hookah tobacco smoking was noted on 39 sites (27%) through cultural references (with common reference to locations such as Morocco, Lebanon, and India), and it was noted on 42 sites (29%) in statements providing a historical context.

Sites commonly promoted positive sensations of various types. While 104 (72%) promoted flavors of hookah tobacco anywhere in the site, over half of these sites did so on the opening page. Relaxation and pleasure were emphasized by 102 sites (71%). The social aspect of hookah tobacco smoking was also emphasized, with 46 sites (32%) doing so on the opening page via statements such as “People gather to socialize and lounge for peaceful conversation and environment”. Product quality was emphasized in 70 sites (49%).

Discussion

These findings demonstrate that hookah tobacco smoking establishments are promoted on the Internet, with representation from all U.S. regions. Hookah establishments commonly offered food, alcohol, and popular social activities such as dancing. While only 26% of the websites mentioned the word *tobacco* on the opening page, this page was more frequently used to promote flavorings, pleasure, relaxation, product quality, and cultural and social aspects of hookah tobacco smoking. No websites required age verification.

These findings are consistent with previous research about the perceptions and attitudes of hookah smokers in which hookah use has been described as a convivial and pleasurable way to spend good times with friends^{45,46} and as an enticingly novel experience⁴⁷ that sometimes occurs in the presence of sexually suggestive behavior in social settings and gatherings.⁴⁸ Similarly, misperceptions regarding safety and negative health consequences, often stemming from the fruit flavoring of the tobacco and lightness of the smoke produced by hookahs, have been reported.⁴⁷⁻⁴⁹ These user perceptions mirror messages promoted on the websites described in the current study.

It is not clear whether the misperceptions stem from images in popular media (including websites such as those assessed) or whether these websites merely reflect prevailing beliefs. The elaboration likelihood model,⁵⁰ a prevailing model of communication theory, suggests that persuasive messages are highly constructed by message architects who (consciously or not) use various techniques to de-emphasize cognitive processing of the message in favor of emotional processing. Cultivation theory further suggests that the messages may subsequently alter viewers' perceptions.⁵¹ Thus, while this study cannot definitively conclude that exposure to messages such as the ones assessed can directly alter perceptions, it is likely that these types of media messages play a role in enhancing or propagating popular myths related to hookah tobacco smoking.

In the Eastern Mediterranean region, accessibility to hookah smoking in places that also serve food and beverages has contributed to an increase in hookah use.^{46,52} The same may be true in the U.S., where most hookah tobacco smoking establishments concurrently offer other products, such as food, alcohol, and coffee. Although some people may visit these establishments only to socialize and consume food or beverages, they are still at risk of exposure to hookah tobacco smoke. This is of particular concern in view of recent evidence that environmental carbon monoxide is more concentrated in hookah establishments than in traditional bars.¹⁴ Ironically, clean air laws designed to protect patrons and workers from traditional tobacco smoke often exempt hookah tobacco smoking establishments, which may ultimately expose patrons to larger toxin loads.^{14,46,52,53}

Also of concern is the lack of age requirements for viewing the websites of hookah establishments, entering the establishments, and using their tobacco products. Although major tobacco companies are required to limit access to website content to those aged 18 years, to demand registration that includes proof of age, and to list their products as being available only to people aged 18 years, there are no such requirements for hookah establishments. This may have contributed to hookah use among individuals aged <18 years. Published statewide data from Florida and Arizona, for example, show steady increases in hookah tobacco smoking from 6th grade to 12th grade, at which time the prevalence of this form of tobacco use is about 15%.^{7,54}

While hookah tobacco use is less prevalent than cigarette use, it may continue to increase if hookah use is left unregulated. For this reason, extension of cigarette-related policy measures to the use of hookah tobacco and related paraphernalia may be warranted.⁴⁶ For example, the recently enacted legislation which gave the U.S. Food and Drug Administration authority to regulate cigarettes should similarly address hookah tobacco smoking. As an illustration, flavorings in cigarettes are now substantially limited while hookah tobacco is universally flavored. Thus, it may be valuable to standardize these types of policies to include all types of tobacco.

Similarly, it may be valuable to systematically assess how policies already in place apply to hookah tobacco smoking. For example, many of the establishments represented in the 144 sites in the current study are located in municipalities with explicit policies limiting indoor cigarette smoking. Although some hookah tobacco smoking establishments may have received formal exemptions from these policies, others may be in violation with extant codes.

The lack of the word *tobacco* throughout the websites of hookah establishments is notable. Hookah users as well as nonusers tend to perceive low harm from hookah tobacco smoking.^{4,6,24,25} Omitting the word *tobacco*, intentionally or not, may further the misconceptions about hookah smoking. It therefore may be valuable for educational programs to emphasize that the product is tobacco and that its smoke contains combustion products similar to those in cigarettes.

These results suggest two other reasons that users might perceive low harm. First, some sites include information directly stating that hookah smoking is milder or safer than cigarette smoking. Additionally establishments often describe themselves as “cafés” and “bars.” By using this terminology and promoting the social, fun, relaxing atmosphere of a coffee shop or bar, the establishments de-emphasize that the product being used is tobacco, rather than something many students feel is more benign, such as coffee or alcohol. Because these establishments tend to feature activities and amenities that overlap with those offered by cafés and bars, such as food, dancing, and live music, they may be particularly compelling to participants aged <21 years, who are not yet permitted to enter traditional bars.

This study had several limitations inherent in Internet studies and qualitative studies. Any study of data accessed via the Internet is limited by the fact that data are captured at only one point in time (although search engine results continually change over time). Because each search engine uses a different proprietary algorithm for retrieval of documents, and because some algorithms are more robust than others for different searches, there may be websites that were not included in the search results. Similarly, utilization of more key words may have increased the number of sites captured. Therefore, the study sample may not be representative of all hookah establishments. However, because the three search engines obtained relatively consistent results, and because a snowball-sampling method yielded substantial redundancy of sites, it is likely that the majority of sites were captured.

Additionally, although researchers noted prominence of the different codes by describing whether a certain code was present on the first page or the remainder of the document, relative numbers of images on each site were not coded.

This study focused only on descriptive analysis of content. Although the search strategy aimed to capture the most frequently assessed sites by utilizing the most common “hits” from the largest search engines, it did not explicitly measure traffic to websites. Similarly, this study did not assess the effect of content on smoking behavior. It may be valuable for future studies to address how frequently sites such as these are accessed and whether smoking behavior is affected by hookah smoking portrayed in the media.

Conclusion

This analysis of 144 websites representing hookah tobacco smoking establishments suggests that these establishments, which exist in all geographic areas of the U.S., tend to promote themselves as highly social, cultural, and fun places for young people to relax and enjoy themselves. The promotional materials of the establishments de-emphasize age limits, health warnings, and even that tobacco is involved in hookah smoking. These findings suggest that health education and policy changes are needed to alter misperceptions related to hookah tobacco smoking.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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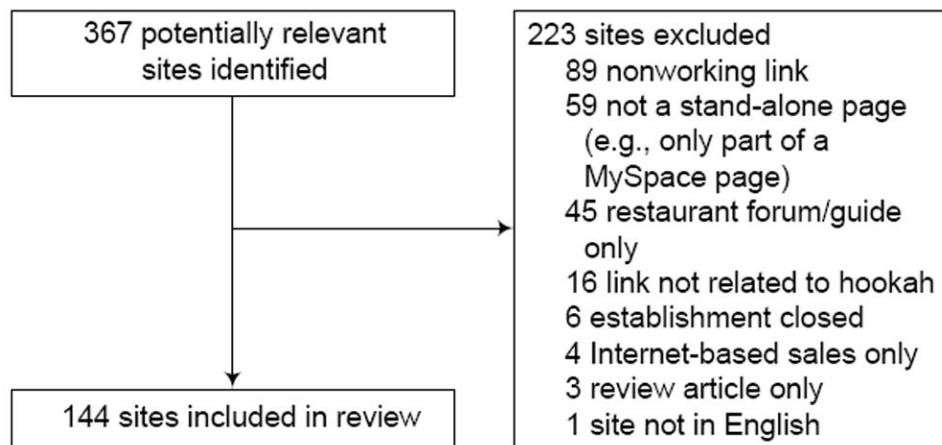


Figure 1.

Website selection

Note: Although some websites did not meet inclusion criteria for more than one reason, each website was assigned a primary reason for exclusion. These numbers represent websites excluded for the primary reasons listed.

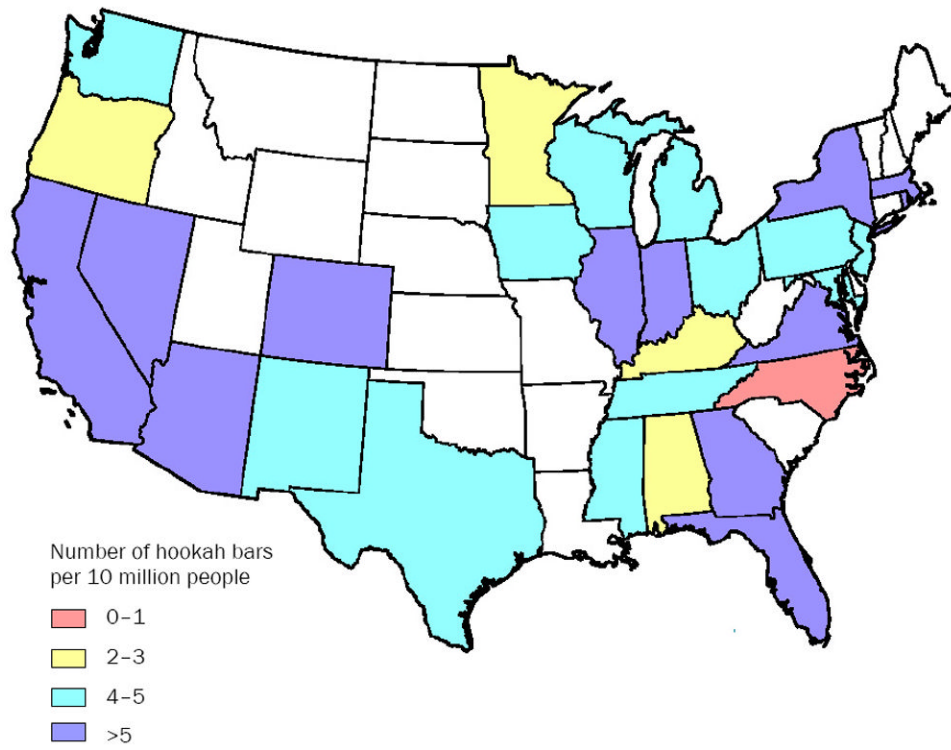


Figure 2. Concentration of the 144 U.S. hookah tobacco establishments with stand-alone websites described in this study

Table 1

Characteristics of the 144 hookah tobacco smoking establishments, as reported on websites

Coding Category and Subject	n (%)
1. Other products	
Serves food	114 (79)
Is a full-service restaurant	68 (47)
Serves alcohol	59 (41)
2. Available activities	
Offers dancing	53 (37)
Offers live music or disc jockey	53 (37)
Has billiards	4 (3)
3. Hookah-related amenities	
Offers tobacco-free products to smoke	6 (4)
Has outdoor patio for smoking hookah	10 (7)
Sells hookah supplies	43 (30)
Advertises hookah specials and sales	23 (16)
4. Electronic or digital services	
Provides Wifi	32 (22)
Has Twitter account	22 (15)
Has Facebook page	44 (31)
Has MySpace page	31 (22)