

#Hookahlife: The Rise of Waterpipe Promotion on Instagram

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Health Education & Behavior
1–8
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sagepub.com/journalsPermissions.nav
DOI: 10.1177/1090198118779131
journals.sagepub.com/home/heb



Abstract

Introduction. Hookah smoking is becoming increasingly popular worldwide, especially among young adults. The growth of social media has also enabled sharing of opinions, experiences, and marketing related to hookah via user-generated content. **Aim.** To evaluate the portrayal and promotion of hookah on Instagram and to highlight public health challenges created by this content. **Method.** A qualitative content analysis was performed on a sample of 301 Instagram posts made with the hashtags #hookah or #shisha in October 2016. **Results.** Of the 301 coded posts, 279 were relevant to hookah. These posts were most commonly made by hookah lounges/bars (29.2%) and individual users (27.6%). Posters were most commonly from Russia (38.5%), the United States (18.6%), and Germany (10.7%). A total of 63.8% of the posts were promotional in nature; 19.7% of posts contained hashtags that expressed hookah identity or community (e.g., #hookahlife); 35.5% of posts associated nightlife activities with hookah smoking and 33.0% portrayed hookah smoking as a social activity. Only one post (0.4%) mentioned that hookah might have negative health effects. Likes were more common on posts depicting novel rather than traditional hookah designs ($p = .027$). **Conclusions.** Images from Instagram may help in understanding health behaviors such as hookah smoking. Our results suggest that domestic and international hookah promotion is common on Instagram. Instagram posts cast hookah in an overwhelmingly positive light and may normalize hookah use through associations with nightlife, community, and hookah identity. Policy makers and researchers should explore approaches for reducing the volume of promotional posts and tailoring counter-marketing to the specific themes presented on social media.

Keywords

hookah, Instagram, social media, tobacco control, waterpipe

The past two decades have witnessed a surge in hookah (waterpipe) smoking, an ancient smoking method that until recently has been practiced by older adults in the Middle East. However, following the introduction of flavored hookah tobacco, this smoking method has regained popularity worldwide, especially among youth (Maziak et al., 2015). Hookah smoking involves the passage of charcoal-heated air through a perforated aluminum foil and across the tobacco mixture to become smoke that bubbles through water before being inhaled by the smoker (World Health Organization [WHO] advisory, 2015). The passage of smoke through water, combined with the appealing and fruity taste of the flavored tobacco, explains some of the common misconceptions around the relative safety of hookah smoking when compared with cigarettes (Griffiths & Ford, 2014). However, a growing body of evidence suggests that hookah smoking can lead to nicotine dependence (Bahelah et al., 2016) and many other known smoking-related illnesses such as cancer, cardiovascular disease, and respiratory disease (Waziry et al., 2017).

In the United States, hookah use is increasing rapidly, especially among youth. According to the National Youth Tobacco Survey, the prevalence of current hookah smoking among high school students has significantly increased during 2011–2015 from 4.1% to 7.2% (Singh et al., 2016). In fact, in 2015, out of an estimated 4.7 million middle and high school students who are users of any tobacco product, 1.2 million used hookah (Singh et al., 2016). Furthermore, public Internet searches on hookah and other novel tobacco products are on the rise (Ayers, Ribisl, & Brownstein, 2011;

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Salloum, Osman, Maziak, & Thrasher, 2015; Yamin, Bitton, & Bates, 2010).

Data from social media can provide pathways for policy changes and public health advocacy (Ayers, Althouse, & Dredze, 2014). Social media platforms are currently used by 7 out of 10 Americans (Pew Research Center, 2017), and evidence suggests that exposure to tobacco use on social media predicts future smoking among young adults (Depue, Southwell, Betzner, & Walsh, 2015). Since hookah smoking is popular among youth and young adults, the role of social media in the spread of hookah becomes an important research question. Instagram, a social networking platform with more than 700 million active users (Instagram, 2017a), is particularly popular among the age-groups at risk for hookah smoking. In fact, 59% of Internet users aged 18 to 29 years and 52% percent of adolescents aged 13 to 17 years use Instagram (Greenwood, Perrin, & Duggan, 2016; Lenhart, 2015).

With its emphasis on visual sharing, images are highly valuable on Instagram and may potentially be even more valuable than “words from other social media platforms alone” (Allem, Escobedo, Chu, Cruz, & Unger, 2017). The visually appealing nature of hookah designs and usage (Guidry, Jin, Haddad, Zhang, & Smith, 2016) suggest that social media users may be drawn to share on these platforms in particular. For example, YouTube and Tumblr have been used to share information about hookah tricks and instructional advice (Carroll, Shensa, & Primack, 2013; Primack, Carroll, Shensa, Davis, & Levine, 2016). Analyzing social media images can provide insights not only into the kinds of content that social media users are exposed to but also into the ways in which hookah users perceive their own usage. Therefore, Instagram offers a unique opportunity to examine user-generated images of health behaviors such as hookah smoking. In addition, commercial establishments have taken note of Instagram’s popularity, by creating their own accounts where they upload posts promoting tobacco products (Laestadius & Wahl, 2017; Laestadius, Wahl, & Cho, 2016). Thus, it is becoming important to closely examine the nature of hookah-related posts on Instagram. Moreover, no prior literature has explored the specific marketing strategies used by hookah promoters or vendors on social media (Krauss et al. 2015). As these users have distinct financial incentives for posting and could potentially be regulated in the future, it is valuable to distinguish between commercial and personal Instagram users. Given the global popularity of hookah, it is also important to examine the extent to which individuals and commercial establishments outside the United States have made use of Instagram to share hookah-related content.

In this study, we aimed to identify (1) how hookah use is portrayed and promoted on Instagram and (2) how the content varied between commercial and personal Instagram users. Our findings should inform the design of tobacco education campaigns and further highlight the value of using social media in understanding health behaviors such as hookah smoking.

Method

To explore hookah content on Instagram, we conducted a qualitative content analysis of a sample of posts to allow for in-depth assessment (Forman & Damschroder, 2007; Schreier, 2012). We collected Instagram posts using the free online tool Netlytic, which is a third-party data collection tool authorized to gather publicly available data from the Instagram application programming interface (Netlytic, 2017). Because these data are publicly available, this project was determined to be exempt from institutional review board approval.

Data Collection

To collect a sample of posts for in-depth qualitative analysis, we selected the hashtags #hookah and #shisha. At the time of study, #hookah had been applied to more than 5 million posts and #shisha to more than 3 million posts. Hashtags are applied by social media users to indicate the context, emotions, or subject matter related to a post (Highfield & Leaver, 2015). They also allow for users to search for/see the messages of other users with public accounts, even if they do not follow them (Gruzd & Haythornthwaite, 2013). Data collection for each hashtag began on October 18, 2016 and ended on October 21, 2016. We used Netlytic to collect 100 posts each hour, which allowed for posts to be collected during daytime and evening hours in all time zones. This generated a list of 10,000 posts, plus the comments on those posts, for each hashtag (#hookah/#shisha). Most hookah-related Instagram posts use multiple hashtags both in the main post and in the comment section. This led to the presence of duplicates. After combining the two lists and removing duplicate posts and post comments, 11,517 posts remained in the sample. Out of the remaining 11,517 posts, a sample of 350 posts was drawn using the Microsoft Excel random selection generator. In order to preserve the privacy of posters who decided to delete posts or change their accounts to private (Laestadius, 2017), we waited 3 weeks before manually capturing each post with a screen caption for analysis. At that stage, 46 post links were no longer active and were removed from the sample, leaving 304 posts for coding.

Codebook Development

A codebook was developed from common content and themes identified in prior research on hookah content found on social media (Carroll et al., 2013; Grant & O’Mahoney, 2016; Guidry et al., 2016; Primack et al. 2016). We expanded on past work documenting marketing for hookah by including codes to identify specific marketing strategies used in promotional posts (Allem, Chu, Cruz, & Unger, 2017; Krauss et al. 2015). Based on recent work identifying e-cigarette-related community and identity hashtags on Instagram (e.g., #vapelite, #vapefam) (Laestadius et al., 2016), we also coded

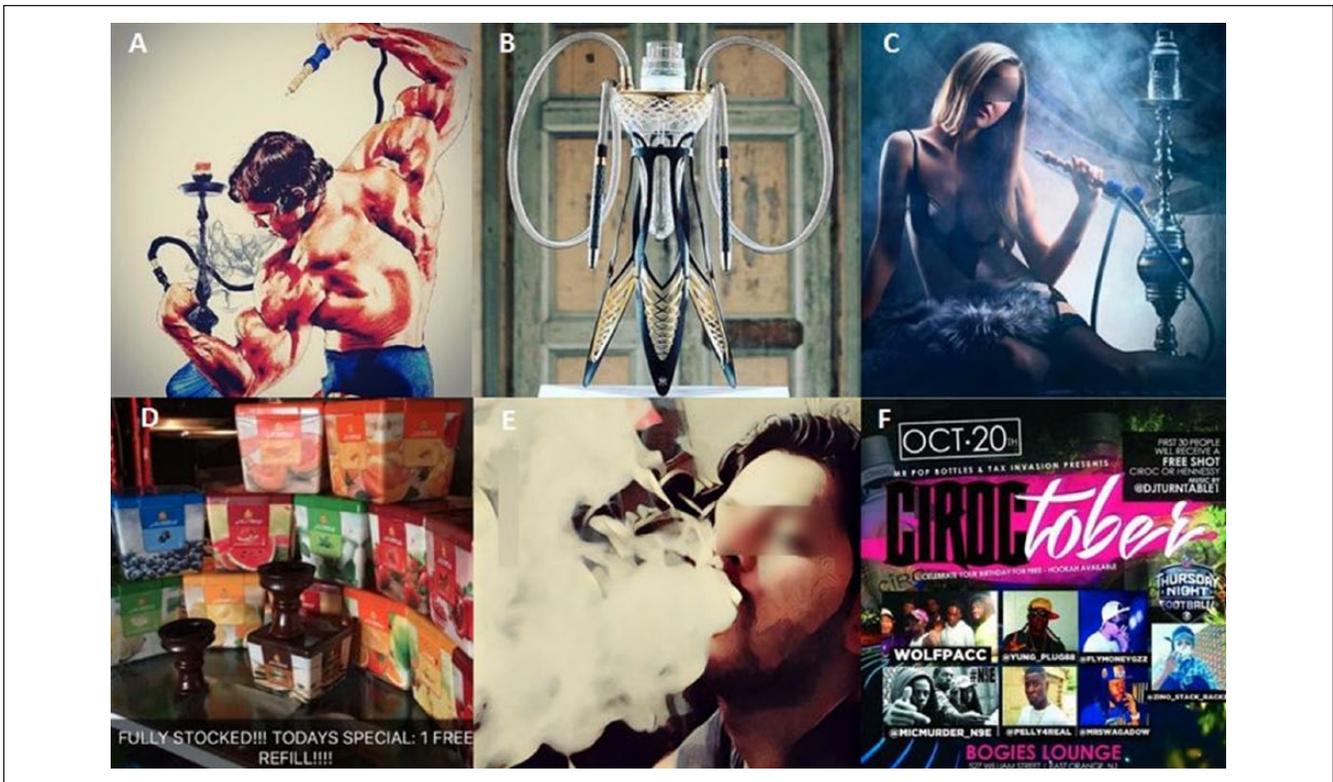


Figure 1. Selected examples for Instagram images and depicted themes: (A) associating hookah smoking with fitness, addiction, and identity (hashtags used: #fitness, #shishalife, #shishaholic); (B) associating hookah smoking with glamour, luxury, addiction, and identity (hashtags used: #luxury, #hookahaddiction, #hookahlife, #hookahexclusive); (C) associating hookah smoking with sexiness and addiction (hashtags used: #hotgirl, #hookah, #hookaholics); (D) advertising for hookah tobacco brands and offering special discounts (hashtags used: #alfakher, #starbuzz, #tangier, #fumari); (E) personal post using image-enhancing effect (hashtags used: #relax, #chill, #friends, #hookahaddiction); (F) a poster promoting a DJ party where hookah is also served (hashtags used: #Dj, #drinks, #performance, #hookah).

for hashtags that indicated identification as a hookah smoker or membership in a hookah-specific community. We chose an initial sample of 35 posts from the larger sample for codebook development. Two researchers double-coded these posts in Microsoft Excel. Coding discrepancies were discussed, and the codebook was refined. During this process, we added inductive codes to capture nightlife themes, sports themes, and glamor/status/luxury themes associated with hookah use. The final coding scheme focused on the following six areas (see Figure 1 A-F for selected examples).

1. *Metadata and post type:* We recorded the username of posters, number of post likes and comments, if a post was a video or a still image, and any Instagram filters used. Additionally, we coded for relevance to hookah, type of account (personal, brand, vendor, lounge/bar/club, hookah enthusiast, or event promoter/DJ), country of the poster, primary language of the post, and if the post was personal or promotional in nature. Hookah enthusiasts were those who had hookah-related usernames and/or posted primarily about hookah but lacked a formal commercial affiliation (Laestadius

et al., 2016). Additionally, we recorded all hashtags included in the post.

2. *Descriptive content:* We coded for descriptive factors such as whether one or more people were depicted, apparent sex of people depicted, if a hookah was being used or displayed, any mention or depiction of hookah tricks, instructions about hookah products, hookahs depicted in an aesthetic manner, and any hookah tobacco brands and flavors mentioned or depicted.
3. *Polysubstance use:* We coded posts for the mention of depiction of alcohol, cigarettes or cigars, e-cigarettes or e-hookah, and marijuana.
4. *Promotional content:* Posts were coded for contests and discounts for hookah products or usage, free hookah products or usage with purchase, promotion of hookah use and hookah products by stores or lounges, promotion of hookah lounges or hookah-focused events, and promotion of general clubs/events/bars where hookah is available. We also coded for any posts that mentioned hookah use for or by college students given that this is a popular demographic for

hookah use (Barnett et al., 2013; Grekin & Ayna, 2012; Maziak et al., 2015).

5. *Health messages*: We noted any mentions that hookah smoking is healthy or healthier than other tobacco products and any mentions of addiction to hookah. We also coded for content that was critical of hookah use.
6. *Thematic content*: Posts were coded for various themes as they related to hookah use, including sexual, social, fun, sports, nightlife, glamor/luxury/status, food/dining, novelty, relaxation, and identity/community. Additionally, the overall sentiment of each hookah-related post was recorded as positive, negative, or unsure about hookah usage. As many Instagram posts use images as the primary means of conveying meaning, the positive code included both explicit and implicit (e.g., an image of a hookah with no caption) positive sentiments about hookah use.

Coding Process and Analysis

The unit of analysis was each post (image, captions, and hashtags). Apart from codes focused purely on image/video content, coding was done holistically by considering the meaning created by images/videos in conjunction with captions and hashtags (Laestadius, 2017). However, some content was more prevalent in certain parts of posts. For example, themes of addiction and hookah identity/community were most commonly displayed through use of hashtags such as #Hookaholics, #Shishalover, or #HookahLife. Relevance to hookah was defined broadly and included implied hookah use. Google Translate was used as needed to translate post captions written in languages not spoken by coders. Location was gathered from self-reported geo-location data, hashtags, captions, and user information. We determined account type by examining post content, user information, and the most recent posts on the user's Instagram page. Instagram filters were gathered from the application programming interface via Netlytic. Thematic codes were not mutually exclusive. Each theme functions as a stand-alone code that was evaluated as either a 1 for *present* or 0 for *absent*. However, some descriptive codes were mutually exclusive for conceptual reasons (e.g., language, post type, and overall sentiment).

A 20% random sample of posts ($n = 60$) was double coded by two researchers. Statistical analysis showed an average interrater reliability score (Cohen's κ) of 0.79, ranging from 0.56 to 1, indicating good to outstanding agreement. Therefore, the remainder of the sample was split between the two researchers for coding using the final codebook. Three screen captions of posts that were no longer available online failed to capture the full post caption and were eliminated, resulting in a final sample of 301. Statistical comparisons (i.e., between personal and corporate posts) were made using chi-square tests for categorized variables and t -tests for continuous variables. Data were analyzed using SPSS version 21 (IBM Corp, Armonk, NY, USA).

Results

Of the 301 coded Instagram posts, 22 posts were found to be irrelevant to hookah and were excluded from further analysis, resulting in a final sample of 279 posts (Table 1). These posts were overwhelmingly positive, with 99.6% of posts explicitly or implicitly indicating positive sentiments toward hookah use. Most commonly, posts were made by a hookah lounges/bars (29.2%) and individual social media users (27.6%). Overall, commercial users (hookah lounges/bars, vendors, brands, and representatives) made up 55.5%, while personal users (individuals and enthusiasts) made up 44.5%. Location was geo-tagged for 45.2% of posts and was possible to infer from captions, hashtags, and profile information for an additional 43.3% of posts. Among the 88.5% of posters who provided an indication of their location, 35 countries worldwide were represented. The greatest number of posts were from the Russian Federation (38.5%), the United States (18.6%), and Germany (10.7%). English was the most commonly used language (49.1%), followed by Russian (27.6%). Of all posts, 63.8% were promotional in nature, and promotional information was more commonly posted by commercial users than by personal users (96.8% vs. 22.6%, $p < .001$). Among personal users, hookah enthusiasts most commonly posted promotional content.

Posts most commonly identified hookah use as a nightlife-related activity (35.5%), a social activity (33.0%), and/or a fun activity (32.6%). About one fifth (19.7%) of all posts contained hashtags that expressed hookah identity or community (e.g., #hookahlife). About 6.8% of posts depicted or mentioned hookah tricks, and no posts offered instructions for hookah use. Compared with personal users, commercial users had more prevalent content related to e-cigarettes (14.2% vs. 4.8%, $p = .014$), alcohol use (31.6% vs. 18.5%, $p = .014$), sexual themes (14.0% vs. 5.6%, $p = .019$), nightlife activities (44.5% vs. 24.2%, $p < .001$), dining (19.4% vs. 9.7%, $p = .028$) and tobacco/hookah brands (20.6% vs. 9.7%, $p = .013$). On the other hand, personal users had more prevalent content associating hookah with relaxing (25.8% vs. 13.5%, $p = .014$) and smoking tricks (11.3% vs. 3.2%, $p = .015$). In addition, compared with commercial users, personal users used more filter special effects (47.6% vs. 25.2%, $p < .001$) and included more images of hookahs (75.0% vs. 41.3%, $p < .001$). There was no statistically significant difference in the number of likes or comments between personal and commercial users. However, likes were more common on posts depicting novel and innovative hookah designs as compared with traditional designs ($p = .027$).

Among commercial users, 54.8% explicitly promoted hookah use or products to consumers. Promotional posts frequently promoted events, including those held at hookah lounges/bars (e.g., hookah night, hookah parties) (37.4%) and general events (e.g., live performances, DJ parties, concerts) where hookah was also served (22.2%).

Discussion of the health effects of hookah, either positive or negative, was largely absent. Only one post (0.4%) mentioned that hookah may have negative health effects, and five posts (1.8%) indicated that hookah has some form of health benefits.

Table 1. Descriptive and Comparative Statistics Between Personal and Commercial Instagram Posts for the Whole Sample.

Variables	Total, N = 279	Personal users, N = 124	Commercial users, N = 155	p ^a
Post metadata, <i>M</i> (<i>SD</i>)				
Likes (range: 1-1453)	90 (149.6)	100.9 (158.4)	81.3 (142.1)	.277
Comments (range: 0-20)	1.6 (2.5)	2.3 (3.1)	1.2 (1.7)	.110
Post type, %				
Individual sharing	34.1	73.4	2.6	<.001
Meme/statement	0.7	0.8	0.6	
Promotional	63.8	22.6	96.8	
Other	1.4	3.2	0.0	
Types of promotion, ^b %				
Explicit promotion of hookah use	35.8	12.1	54.8	<.001
Contest	0.7	0.0	1.3	.504
Hookah discount	5.7	1.6	9.0	.009
Free item/usage	1.4	0.0	2.6	.132
Hookah event	24.4	8.1	37.4	<.001
General event	13.3	1.6	22.2	<.001
Media type, %				
Image	89.2	87.1	91.9	.334
Video	10.8	12.9	9.0	
Filter used (special effects), %	35.1	47.6	25.2	<.001
Hookah depiction, ^b %				
Hookah in image	56.3	75.0	41.3	<.001
Aesthetic hookah portrayal	17.2	15.3	18.7	.524
Tobacco/hookah brand mentioned/depicted	15.8	9.7	20.6	.013
Tobacco flavor mentioned/depicted	8.6	8.1	9.0	.833
Hookah tricks mentioned/depicted	6.8	11.3	3.2	.015
Polysubstance use, ^b %				
Alcohol	25.8	18.5	31.6	.014
E-cigarettes	10.0	4.8	14.2	.010
Cigarettes	1.8	0.8	2.6	.386
Marijuana	1.4	1.6	1.3	>.999
Health, ^b %				
Hookah is healthy	1.8	2.4	1.3	.658
Addiction to hookah	9.7	8.9	10.3	.839
Themes, ^b %				
Sexual	10.8	5.6	14.0	.019
Fun activity	32.6	34.7	31.0	.523
Social activity	33.0	35.5	31.0	.444
Sport-related event	7.9	5.6	9.7	.266
Nightlife	35.5	24.2	44.5	<.001
Novel	19.0	16.9	20.6	.448
Dining	15.1	9.7	19.4	.028
Luxury	7.5	4.0	10.3	.066
Relaxing	19.0	25.8	13.5	.014
College	1.8	0.0	3.2	.068
Presence of identity or community #, %	19.7	16.1	22.6	.226
Critical of hookah, %	0.4	0.8	0.0	.444

^aStatistical significance tests were based on *F* test for continuous variables and Fisher's exact test for categorical variable. Boldfaced *p* values indicate statistical significance. ^bCategories are not mutually exclusive.

Discussion

Our content analysis of 279 Instagram posts relevant to hookah indicates that hookah use is overwhelmingly being portrayed in a positive manner on Instagram. As on other social

media platforms (Carroll et al., 2013; Guidry et al., 2016), the negative health effects of hookah use are largely absent on Instagram. While much of this is being driven by commercial users, individual social media users made about 45% of the sample, and posts from these users were also almost

entirely positive about hookah use. In this milieu, health information is not merely being “overshadowed” by pro-hookah marketing (Martinasek, McDermott, & Martini, 2011). Instead, almost all users, commercial or individual, are posting in a manner that portrays hookah use in a positive light and avoids information about potential health risks.

Positive themes within posts differed significantly between commercial and personal users. Personal users largely documented their own use. As a result, they depicted themselves smoking hookah, using image-enhancing effects, performing smoke tricks, and relating to hookah use as a relaxing activity (Figure 1; E). By contrast, commercial users focused on selling hookah use as an appealing lifestyle, making use of sexuality, nightlife themes, and associating hookah use with alcohol drinking and dining. Echoing Allem, Chu, et al.’s (2017) findings, commercial users sometimes promoted hookah-specific lounges, bars, and clubs and other times did not have hookah promotion as their primary intent. As illustrated by Figure 1 (F), these posts instead mentioned hookah only incidentally to promote a nonhookah event or club where hookah may be available for use. This suggests that hookah availability is a selling point to help market clubs and events to Instagram users. This type of promotion may also reinforce the idea of hookah use as normative, social, and expected in the club environment. Overall, Instagram appears to be used more to promote events and businesses than to promote specific deals on hookah use or products.

About 20% of all posts made use of community and identity hashtags. As with prior work on e-cigarette use (Laestadius et al., 2016), there was no statistically significant difference in the use of community and identity hashtags between personal and commercial users. These hashtags (e.g., #hookahlife, #shishalover, or #shishagirl) represent a way for commercial users to make their posts searchable and integrate themselves further into online communities of hookah users. Therefore, it is critical for public health advocates who aim to reach current hookah users on Instagram with counter-marketing messages to apply hashtags used by the hookah user community.

Additionally, about 10% of all posts used hookah addiction hashtags, which similarly shows an internalization of a hookah-related identity. Perhaps most notably, it signals that addiction to nicotine through hookah is not seen as a health risk that is problematic or would dissuade potential customers. In an Internet culture that often embraces irony and sarcasm (Rajadesingan, Zafarani, & Liu, 2015; Reyes, Rosso, & Veale, 2013), #HookahAddiction is not a warning statement so much as a joke or a badge of honor. Further research on the portrayal of nicotine addiction in social media would be valuable to inform the public health response to evolving perceptions of addiction.

While many themes identified were similar to those found on other primarily visual platforms, content differed in one key area. Past research documented a sizeable volume of

posts related to hookah tricks and instructions for hookah usage on YouTube (52% of videos demonstrated tricks, 41% had instructions) and Tumblr (18% of posts portrayed tricks) (Carroll et al., 2013; Primack et al., 2016); however, tricks were found in less than 7% of the Instagram data collected, and no posts offered instructions for use. Given the ability to post 60-second videos on Instagram, this discrepancy does not appear to be entirely due to the design of the platform itself. It may be due to differences in social conventions about platform usage. It also may be that our current data set is more recent than those from the prior studies, and perhaps this type of post has become less popular over time. In either case, it would be valuable to further explore these differences in future studies to help public health officials target the most appropriate platforms for tobacco control.

Our study adds to the literature by documenting social media posting about hookah as a global phenomenon. While English was the language most frequently used, the majority of posts for which a location could be identified originated outside the United States. The single largest source of posts was the Russian Federation, which is a Party to the World Health Organization Framework Convention on Tobacco Control. To the extent that social media users browse content through hashtags or follow foreign accounts, they are exposed not only to domestic hookah promotion but also to products and promotions from other nations. This poses a clear challenge to enforcement of the WHO Framework Convention on Tobacco Control’s cross-border advertising provisions in Article 13. While Article 13 guidelines indicate that “content hosts should have an obligation to remove or disable access to tobacco advertising, promotion and sponsorship once they have been made aware of the content” (WHO, 2013, p. 109), separating commercial from personal users and posts poses a clear logistical challenge (Freeman, 2012).

Our study does come with limitations. We may not have picked up pro- and anti-hookah messaging posts that were not using the general #hookah or #shisha tags. Additionally, while we believe that our systematic approach was likely to capture representative information, it is possible that our sample is not fully representative of all global hookah content. We were in some cases reliant on online software to translate posts in languages not spoken by the research team. Some posts using hookah-specific slang in other languages may therefore have been missed, resulting in underreporting of hookah identity and community hashtags. It may be valuable for future work to use an expanded search strategy, including hashtags referencing hookah in other languages. Nevertheless, our relatively small sample allowed for in-depth qualitative content analysis. This provided what we believe is an important initial step that future work can build on with larger samples.

This study represents an important step in identifying hookah-related themes on Instagram and demonstrates the value in using data from this social platform to complement

and extend our understanding of health behaviors. These findings can inform the design of future tobacco control media campaigns aimed at countering the normalization of hookah use on social media. Given the large number of promotional posts, exploring the possibilities for restricting tobacco promotion on social media platforms such as Instagram is also prudent. However, any regulatory efforts will be complicated by the fact that posts were found to originate from multiple nations. To our knowledge, the truly global nature of this social media content had not previously been established. Any effort to create meaningful reductions in exposure to commercially created content on Instagram must take a collaborative and cross-national approach.

These logistical challenges, paired with first amendment protections in the United States (Ciolli, 2007), suggest the need for creative thinking about policy and messaging campaigns. It may be feasible to advocate for social media platforms themselves to regulate commercial accounts promoting tobacco products. For example, Facebook prohibits formal ads for tobacco and alcohol, and Instagram already prohibits the sale of certain items in posts (even if legal on some regions), suggesting that such a policy would not be unprecedented (Instagram, 2017b; Facebook, 2017). The large number of posts promoting hookah at clubs and events also suggests that amending smoke-free air policies to remove exemptions for hookah establishments would reduce post volume (Allem, Chu, et al., 2017). This study provides further evidence of the critical need for research that evaluates direct and indirect means of reducing the promotion of tobacco products on social media.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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