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Twitter = Quitter? An Analysis of Twitter Quit Smoking Social Networks

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Abstract

Objective—Twitter, a free social networking and micro-blogging service, offers potential for health promotion. Twitter may be a particularly appealing delivery channel for quit smoking programs given commonalities in the personality traits of heavy texters and smokers (e.g., high sensation seeking, impulsivity). This study examined the activity and popularity of Twitter quit smoking social network accounts.

Design—A cross-sectional analysis reviewed all Twitter accounts identified with the key words "quit or stop smoking" or "smoking cessation," dating back to 2007, and examined recent account activity for the month of August 2010.

Results—A total of 153 activated Twitter quit smoking social network accounts were identified with a median of 155 followers and 82 total tweets per account; 49% of accounts had >100 tweets. Nearly half of the accounts (48%) linked to commercial sites for quitting smoking, 43% had tweets on e-cigarettes, and 26% posted automatic news alerts. Only 5% provided personal communications to support cessation and little content mapped onto clinical practice guidelines. In August 2010, 81 of the accounts (53%) were still active with a median of 23 tweets per account that month. Active accounts had more tweets overall and were more likely to have tweets on e-cigarettes compared to inactive accounts.

Conclusions—Study findings demonstrate interest in Twitter for building quit smoking social networks. However, many of the accounts are no longer active, and tweet content is largely inconsistent with clinical guidelines. Future research is needed to explore whether the popularity of Twitter can be leveraged for disseminating evidence-based tobacco treatment strategies on a national and global scale and to examine the effectiveness of this approach on smoking behavior.

Keywords

Tobacco; Cigarettes; Smoking; Social Media; Blogging; Social Networking

Tobacco is the leading preventable cause of death in the US and globally [1]. A number of effective tobacco cessation treatments exist, including individual and group counseling and cessation medications [2]. Existing tobacco cessation treatments, however, have largely used reactive rather than proactive outreach; have targeted smokers who are ready to quit, a minority of the smoking population; and have costs that can be prohibitive. Even with 24-

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hour toll-free telephone quit lines, engagement rates remain very low, reaching < 2% of smokers [3].

Emerging online and mobile technologies offer functionalities that may prove useful in overcoming access, cost, and outreach barriers to smoking cessation treatments. They also may prove useful in engaging unmotivated smokers into the cessation process. The extent to which online and mobile cessation messaging is evidence-based, however, is unknown.

Increasingly popular is the use of texting[1] and social networking sites. Social networking sites are websites that allow users with shared interests to communicate via email; text; micro-blogs[2]; status updates; or instant messaging. Twitter, a free social networking service primarily focused on micro-blogging, combines these functionalities. With Twitter, users communicate via short messages called “tweets,” which have a maximum of 140 characters. Transmitted nearly instantaneously, tweets are received by “followers” of the account on their mobile phones, email, and/or personal Twitter websites. Created in 2006, Twitter membership has grown to >100 million users worldwide [4]. In June 2010, there were about 65 million tweets a day, equating to 750 tweets per second [5].

Nationally, there is a recognized need for research on the use of social media to promote health behaviors and social support [6]. Used primarily by commercial marketers and public relations firms, Twitter is so new that few academics have published on it [7], and no studies have tested its potential for health promotion. Twitter offers several advantages for delivery of behavioral health interventions. It is the leader in technology that allows users to send and receive short message service (SMS) texts free globally on their mobile phones or computers; users pay for texting according to their mobile phone plan, but not for the use of Twitter. Twitter may be a particularly appealing delivery channel for quit smoking programs given commonalities in the personality traits of heavy texters and smokers, such as high sensation seeking and impulsivity [8–10].

The current study examined the activity and content of Twitter quit smoking social network accounts. We chose to focus on user accounts specifically, and not all Twitter content relating to quit smoking in general, in order to determine the current presence of profit and nonprofit organizations using Twitter to deliver quit smoking related information. In analyzing the popularity and activity of these accounts, by accounting for the number of followers and tweets respectively, we sought to understand the demand for such services by users of Twitter.

Methods

To identify Twitter quit smoking accounts, we conducted a search of account user names using the key words “quit or stop smoking” or “smoking cessation.” Data were obtained on account: date activation, location (e.g., North America, Europe, global), number of followers, total tweets since activation, and total tweets in August 2010. We examined tweets for the month of August 2010 to assess current activity of the accounts since those that become inactive on Twitter are not automatically deactivated. The data were collected within a 72-hour period and reflect participation rates up to September 1, 2010. One author (RK) coded all of the Twitter accounts; 20% were also coded by the lead author (JJP) and checked for accuracy, which was over 90% across categories. Any inconsistencies were

[1]Texting is the exchange of brief written messages between mobile devices.
[2]Micro-blogs are brief entries (i.e., a sentence, sentence fragment, or image) posted as a narrative by an author that are typically catalogued chronologically.

discussed and resolved. Accounts with at least one follower and two or more tweets were considered activated quit smoking social network accounts.

For each identified quit smoking social network account, we coded whether the majority of tweets were: (1) personal communications to support cessation; (2) postings via an automatic newsfeed; or (3) links to commercial sites for purchase of cessation products. Given the growth in popularity in e-cigarettes, we also tallied the number of tweets that mentioned e-cigarettes using keywords “electronic, e-cig, vapor, and liquid.”

Accounts with personal communications to support cessation were text coded in relation to clinical practice guidelines for treating tobacco dependence [2]. Given the sheer volume, it was not feasible to perform a content analysis of all tweets on all identified Twitter accounts. Since the accounts with personal communications to support cessation were not commercially driven and did not serve simply as a conduit for news feeds, they were anticipated to provide a best-case scenario for the extent to which tweets on the quit smoking twitter accounts are evidence-based. The University of California, San Francisco's Institutional Review Board approved the study procedures.

Since little research has been conducted on Twitter for health promotion, the analyses were largely descriptive. However, we hypothesized positive correlations between days since account activation, total tweets per account, and the number of followers based on (a) accounts accumulating more tweets and followers over time and (b) a popularity effect in which actively tweeting accounts attract more followers. Associations were tested with Spearman's rho, a nonparametric correlation, given the non-normality of the variables' distributions. We also anticipated that e-cigarette postings would be associated with current account activity, given the rise in interest in e-cigarettes at the time of data coding.

Results

A total of 217 unique Twitter quit smoking accounts were identified, created between July 2007 and August 2010; 60% were activated in the past year (see Figure 1). Accounts with less than one follower or two tweets were excluded leaving 153 accounts for analysis. Location was identified for 97 accounts, and of these, 58 (59%) were from North America, 23 (23%) from Europe, 12 (12%) identified as global, and 4 (4%) were other (Asia, Oceana). Nearly all accounts (98%) were in English language; the 3 others were in Spanish, Russian, and Japanese, translated for analysis in the current study.

The 153 accounts had a median of 155 followers (range: 1 to 50,210) and 82 total tweets since activation (range: 2 to 18,369); 49% of accounts had >100 tweets. The number of total tweets and followers were significantly positively correlated (Spearman's rho=.57, $p<.001$), as were days since activation and followers (Spearman's rho=.48, $p<.001$) and days since activation and total tweets per account (Spearman's rho=.23, $p=.005$).

Tobacco news alerts were automatically posted on 26% of the accounts; 48% of the accounts linked to commercial sites and 43% had tweets on e-cigarettes. Commercial sites promoted a variety of quit smoking products, including laser therapy, hypnotherapy, herbal remedies, quit smoking mobile applications, e-cigarettes, and other unregulated tobacco products. Tweets on e-cigarettes ranged from health warnings to claims of health benefits over traditional cigarettes and linked to commercial websites for purchasing.

Only 8 of the 153 accounts (5%) provided personal communications to support cessation; 3 were started by self-disclosed ex-smokers. Four of the 8 accounts were still active in August 2010. Tweets by these 8 accounts were text word searched and coded in relation to clinical practice guidelines for treating tobacco dependence [2]. The accounts had a total of 4753

tweets of which 647 (14%) related to recommendations of clinical practice guidelines for treating tobacco dependence, summarized by category in Figure 2.

Overall, 81 quit smoking social network accounts (53%) were still active in August 2010 with a median of 23 tweets per account that month. Accounts that were still active in August 2010 had more total tweets (Spearman's rho=.50, p<.001) and were more likely to have postings on e-cigarettes (54%) compared to accounts that were not active in August (31%), (χ2=8.78, df=1, p=.003).

Conclusion

The use of Twitter has grown exponentially. Study findings demonstrate interest in Twitter for creating social networks and following micro-blogs on quitting smoking, with 60% of quit smoking accounts created in the past year. The number of total tweets and followers were positively correlated, as were days since activation and followers and days since activation and total tweets.

Summing across the 153 quit smoking social network accounts, we identified a total of 143,287 tweets created since account activation (11,848 in the month of August 2010 alone) and 123,868 registered followers. Yet, nearly half (47%) of the accounts had no current activity. The quit smoking accounts with current activity had a greater number of tweets and were more likely to have tweets on e-cigarettes. The association between e-cigarette tweets and current activity likely reflects the recent surge of e-cigarette advertisements as well as attention in the news media around product regulation. An analysis of search queries on Google indicated that by September 2010 (the time of our analysis), e-cigarettes as a search term exceeded cessation medications, with the difference being several-hundred-fold greater in the US and UK [11].

In our search of Twitter quit smoking social network accounts, nearly half of the accounts (48%) were commercially focused, most promoting programs and products with limited demonstrated efficacy (e.g., hypnosis, laser, herbs). A mere 2% (4 of 217) of accounts were still active in August 2010 and provided personal support messaging for quitting smoking. Even within these accounts, the evidence base of cessation messaging was limited. For example, few tweets (< 5%) recommended use of FDA-approved cessation pharmacotherapy, promoted use of quitlines or physician counseling, or engagement in cognitive-behavioral strategies for quitting smoking.

Providing a thorough review of Twitter activity during a specific time range, the current study is cross-sectional and observational. Notably, Twitter is dynamic by nature, with new accounts starting and others falling dormant. As an alternative search strategy, future research should examine viral message spread by examining re-tweets or # references (hash tags) about smoking. Analysis of industry sponsorship of tweets also would be of interest.

The current study highlights the potential of Twitter for health promotion efforts such as supporting smoking cessation. Twitter and other social networking platforms offer tremendous and yet unrealized potential in engaging users who want to quit smoking. Yet, accounts identified with what appears to be an explicit goal to create quit smoking related tweets have thus far failed in creating an active and sustainable tool for people trying to quit smoking. Trending topics representative of the current zeitgeist are susceptible to swings in public attention rather than evidence-based.

Future research is needed to explore whether the popularity of Twitter can be leveraged for disseminating evidence-based tobacco treatment strategies on a national and global scale and to examine the effectiveness of this approach on smoking behavior. Perhaps the most

effective use of Twitter for smoking relapse prevention may not be its use in the traditional sense, which is best suited for attracting people to the site, but to use the free infrastructure of Twitter and harness its ability to allow for live interactive mobile support groups. Through such a method, utility can be measured by quit smoking success and not by the ebb and flow of popular tweeting trends.

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What this Paper Adds

Nationally, there is a recognized need for research on the use of social media, such as texting and social networking, to promote health behaviors and social support. Twitter, a free social networking service primarily focused on micro-blogging, combines these functionalities. Used primarily by commercial marketers and public relations firms, Twitter is so new that few academics have published on it, and no studies have tested its potential for health promotion.

The current study comprehensively searched Twitter for quit smoking social network accounts and identified 153 of which 53% had recent activity. Tweet content was largely inconsistent with tobacco treatment clinical guidelines. Overall, few accounts were successful in creating an active and sustainable tool for people trying to quit smoking suggesting an area ripe for further research and application.

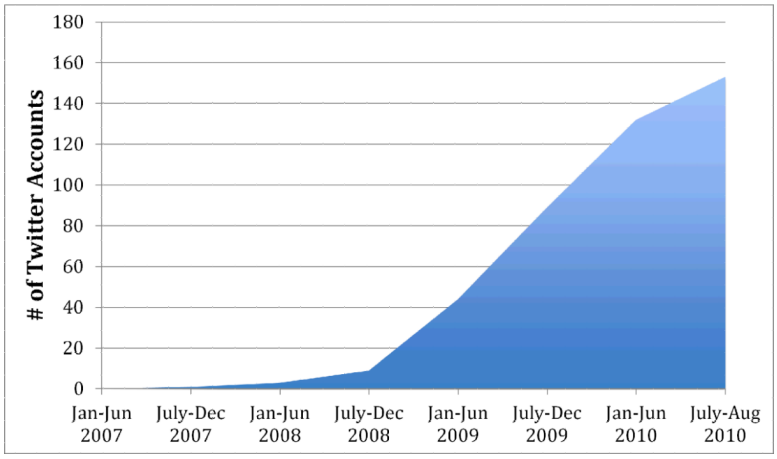

Figure 1.
Growth of Twitter Quit Smoking Social Network Accounts (N=153)

Figure 2.
Tweet Content of the Eight Twitter Accounts Providing Personal Communications to Support Cessation