Twitter–quitter? An analysis of Twitter quit smoking social networks

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ABSTRACT

Objective Widely popular, Twitter, a free social networking and micro-blogging service, offers potential for health promotion. This study examined the activity of Twitter quit smoking social network accounts.

Design A cross-sectional analysis identified 153 activated Twitter quit smoking accounts dating back to 2007 and examined recent account activity for the month of August 2010.

Results The accounts had a median of 155 followers and 82 total tweets per account; 49% of accounts had >100 tweets. Posted content was largely inconsistent with clinical guidelines; 48% linked to commercial sites for quitting smoking and 43% had tweets on e-cigarettes. In August 2010, 81 of the accounts (53%) were still active.

Conclusions Though popular for building quit smoking social networks, many of the Twitter accounts were no longer active, and tweet content was largely inconsistent with clinical guidelines. Future research is needed to examine the effectiveness of Twitter for supporting smoking cessation.

Tobacco is the leading preventable cause of death in the USA and globally.1 A number of effective tobacco cessation treatments exist, including individual and group counselling 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-h 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. However, the extent to which online and mobile cessation messaging is evidence based is unknown.

The use of texting and social networking sites is increasingly popular. Social networking sites are websites that allow users with shared interests to communicate via email, text, micro-blogs,4 status updates or instant messages. 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.5 In June 2010, there were about 65 million tweets a day, equating to 750 tweets per second.6

Nationally, there is a recognised need for research on the use of social media to promote health behaviours 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 behavioural health interventions. It is the leader in technology that allows users to send and receive short message service 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 programmes given commonalities in the personality traits of heavy texters and smokers, such as high sensation seeking and impulsivity.8–10

This 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 non-profit organisations using Twitter to deliver quit smoking related information. In analysing 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 keywords ‘quit or stop smoking’ or ‘smoking cessation’. Data were obtained on account date of activation, location (eg, 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 the current activity of the accounts since inactive accounts on Twitter are not automatically deactivated. The data were collected within a 72 h period and they reflected participation rates up to 1 September 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 discussed and resolved. Accounts with at least...
one follower and two or more tweets were considered to be 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 news feed or (3) links to commercial sites for the purchase of cessation products. Given the growth in popularity of 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. 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 and 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 hypothesised positive correlations between days since account activation, total tweets per account and the number of followers based on (1) accounts accumulating more tweets and followers over time and (2) a popularity effect in which actively tweeting accounts attract more followers. Associations were tested with Spearman’s rho, a non-parametric correlation, given the non-normality of the distribution of the variables. 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 (August 2009-August 2010) (see figure 1). Accounts with less than one follower or two tweets were excluded leaving 155 accounts for analysis. Location was identified for 97 accounts, and of these, 58 (59%) were from North America, 23 (23%) were from Europe, 12 (12%) were identified as global and 4 (4%) were other (Asia, Oceania). Nearly all accounts (98%) were in English language; the three others were in Spanish, Russian and Japanese, translated for analysis in the study.

The 155 accounts had a median of 155 followers (range: 1–50210) and 82 total tweets since activation (range: 2–18369); 49% of accounts had >100 tweets. The number of total tweets and followers were significantly positively correlated (Spearman’s rho=0.57, p<0.001), as were days since activation and followers (Spearman’s rho=0.48, p<0.001) and days since activation and total tweets per account (Spearman’s rho=0.25, p=0.005).

Twitter news alerts were automatically posted on 26% of the accounts; 48% of the accounts were linked to commercial sites and 4% 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 155 accounts (5%) provided personal communications to support cessation; three were started by self-disclosed ex-smokers. Four of the eight accounts were still active in August 2010. Tweets by these eight accounts were text word searched and coded in relation to clinical practice guidelines for treating tobacco dependence. The accounts had a total of 4755 tweets of which 647 (14%) related to recommendations of clinical practice guidelines for treating tobacco dependence, summarised 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=0.50, p<0.001) and were more likely to have postings on e-cigarettes (54%) compared with accounts that were not active in August (51%), ($\chi^2$=8.78, df=1, p=0.003).

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 155 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 probably 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 USA and UK.

In our search of Twitter quit smoking social network accounts, nearly half of the accounts (48%) were commercially focused, most promoting programmes and products with limited demonstrated efficacy (eg, 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...
647 of the 4753 total tweets related to US Tobacco Treatment Clinical Practice Guidelines (14% of total tweets)

# Grouped by categories, the tweets advised:

- Exercise for quitting smoking
- FDA cessation medications
- Support from family/friends
- Developing a quit plan
- Use of quitlines
- Relaxation strategies
- Physician advice
- Distraction techniques
- Self-rewards
- Group/individual counselling

Figure 2 Tweet content of the eight twitter accounts providing personal communications to support cessation.

was limited. For example, few tweets (<5%) recommended use of FDA-approved cessation pharmacotherapy, promoted use of quitlines or physician counselling or engagement in cognitive-behavioural 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 the spread of viral messages 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 unrealised 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. Analysis of industry sponsorship of tweets would be of interest.

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 behaviour. 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.

- Nationally, there is a recognised need for research on the use of social media, such as texting and social networking, to promote health behaviours and social support. Twitter, a free social networking service primarily focused on microblogging, 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.

- This 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.

What this paper adds

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Competing interests None.

Ethics approval This study was conducted with the approval of the UCSF.

Contributors JJP and CP conceived the idea for this study. JJP oversaw the data collection, conducted the data analyses and led writing of the manuscript. PK contributed to the manuscript and provided feedback on revisions. RK led the data collection effort and participated in the revision of the manuscript. JML contributed to the manuscript and interpretation of study findings.

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