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LETTERS TO THE EDITOR

Mining twitter to understand the smoking cessation barriers

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Abstract

Smoking cessation is challenging and lack of positive support is a known major barrier to quitting cigarettes. Previous studies have suggested that social influences might increase smokers' awareness of social norms for appropriate behavior, which might lead to smoking cessation. Although social media use is increasing among young adults in the United States, research on the relationship between social media use and smoking cessation is lacking. Twitter has provided a rich source of information for researchers, but no overview exists as to how the field uses Twitter in smoking cessation research. To the best of our knowledge, this study conducted a data mining analysis of Twitter to assess barriers to smoking cessation. In conclusion, Twitter is a cost-effective tool with the potential to disseminate information on the benefits of smoking cessation and updated research to the Twitter community on a global scale.

Key words: Smoking cessation; Stop smoking; Smoking; Twitter; Tweets

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Core tip: Twitter use is increasing globally, research on the relationship between Twitter use and smoking cessation is lacking. This study is to the best of our knowledge the first Twitter analytic study of smoking cessation. Twitter is a cost-effective tool with the potential to disseminate information on the benefits of smoking cessation and updated research to the Twitter community on a global scale. Digital health interventions through Twitter that educate the health community are still needed.

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TO THE EDITOR

Smoking cessation is challenging and lack of positive support is a known major barrier to quitting cigarettes. Previous studies have suggested that social influences might increase smokers' awareness of social norms for appropriate behavior, which might lead to smoking cessation[1,2]. Although social media use is increasing among young adults in the United States, research on the relationship between social media use and smoking cessation is lacking. Recent studies have shown that Twitter data mining can have broad implications on cardiovascular health research[3,4]. We report on an assessment of barriers to smoking cessation by performing data mining in Twitter.

Twitter (https://twitter.com/) postings containing the terms "quit smoking", "smoking cessation", and "stop smoking" were obtained for July 23, 2009, through November 22, 2016. All analyses relied on public, anonymized data and adhere to the terms and conditions, terms of use, and privacy policies of Twitter. No exact tweets are included in this report. Data mining were performed with R version 3.2.3.

We identified 39731 tweets associated with smoking cessation and identified insights into people's perceptions of quitting smoking and some barriers to cessation. In the sample, 12375 retweets (reposted or forwarded messages) were excluded from the analysis. The results found 13099 negative statements, 4425 positive statements, and 9832 ambiguous or unclear statements. Reasons to not quit smoking were found in 965 tweets. For example, "someone dies from smoking, someone dies from a heart attack, what's the difference both are dead". Some tweets reported a social influence on smoking cessation, such as "sometimes I think people only quit smoking for the Facebook likes". Some tweets did not report barriers to smoking cessation. For example, "I wonder how many times I'm going to quit smoking". A few tweets stated a need for more information from the community, such as "yoo is there anyone on here who has quit smoking successfully and can give me sum tips". Several academic institutions have been using Twitter to deliver health messages to the community. For example, "smoking increases the risk of death from lung cancer, heart attack and stroke by 200%".

Overall, Twitter is a cost-effective tool with the potential to disseminate information on the benefits of smoking cessation and updated research to the Twitter community on a global scale. Digital health interventions through Twitter that educate the health community are still needed.

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