



Facebook recruitment of young adult smokers for a cessation trial: Methods, metrics, and lessons learned



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ARTICLE INFO

Article history:

Received 10 April 2014

Received in revised form 9 May 2014

Accepted 12 May 2014

Available online 23 May 2014

Keywords:

Social media

Facebook

Participant recruitment

Young adult

Tobacco

Smoking cessation

ABSTRACT

Further understanding is needed of the functionalities and efficiency of social media for health intervention research recruitment. Facebook was examined as a mechanism to recruit young adults for a smoking cessation intervention. An ad campaign targeting young adult smokers tested specific messaging based on market theory and successful strategies used to recruit smokers in previous clinical trials (i.e. informative, call to action, scarcity, social norms), previously successful ads, and general messaging. Images were selected to target smokers (e.g., lit cigarette), appeal to the target age, vary demographically, and vary graphically (cartoon, photo, logo). Facebook's Ads Manager was used over 7 weeks (6/10/13–7/29/13), targeted by age (18–25), location (U.S.), and language (English), and employed multiple ad types (newsfeed, standard, promoted posts, sponsored stories) and keywords. Ads linked to the online screening survey or study Facebook page. The 36 different ads generated 3,198,373 impressions, 5895 unique clicks, at an overall cost of \$2024 (\$0.34/click). Images of smoking and newsfeed ads had the greatest reach and clicks at the lowest cost. Of 5895 unique clicks, 586 (10%) were study eligible and 230 (39%) consented. Advertising costs averaged \$8.80 per eligible, consented participant. The final study sample ($n = 79$) was largely Caucasian (77%) and male (69%), averaging 11 cigarettes/day ($SD = 8.3$) and 2.7 years smoking ($SD = 0.7$). Facebook is a useful, cost-effective recruitment source for young adult smokers. Ads posted via newsfeed posts were particularly successful, likely because they were viewable via mobile phone. Efforts to engage more ethnic minorities, young women, and smokers motivated to quit are needed.

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1. Introduction

Studies of tobacco use and other health behaviors have reported great challenges in recruiting young adults (Bost, 2005; Davies et al., 2000). More successful methods have reached youth in settings where they frequent (e.g., schools, bars/nightclubs), emphasized privacy and flexibility, and made use of peer “informants” to determine recruitment locations (Berg et al., 2011; Kalkhoran et al., 2013). With the potential for wider reach and greater engagement, social media sites, such as Facebook and Twitter, are widely popular among young adults, and are demonstrating utility in health-related research (Gold et al., 2011). Social media are used most often and by an overwhelming majority of online 18 to 29 year olds (89%), with Facebook alone visited by 70% of young adults on a typical day (Duggan and Brenner, 2013). Social

media can meet young adults where they frequent, at any hour of the day, with the potential for private interactions, and the appearance of peer outreach. Further, marketing campaigns on Facebook offer the opportunity to target advertisements by age, location, or keywords, for engaging research participants who meet specific recruitment criteria.

A 2012 review of approximately 20 studies using social media for research recruitment found that social media appears cost-effective, efficient, and successful in engaging a diverse range of individuals (Ryan, 2013). In the area of health research, use of Facebook has largely centered on recruitment of adults for cross-sectional surveys. Examples include studies of nutrition education programming with low-income Pennsylvania residents; (Lohse and Wamboldt, 2013) adult therapy preferences; (Rogers et al., 2009) adult sexual orientation; (Vranganlova and Savin-Williams, 2012) and birth preferences of pregnant women, with costs of \$11.11 per enrollee (Arcia, 2013). Intervention studies have used Facebook to recruit Veterans for a web intervention targeting alcohol problems and post traumatic stress disorder symptoms (Brief et al., 2013) and a depression prevention intervention (Morgan et al., 2013), though Facebook's targeting was found to be too specific and

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more costly than Google (AUD \$11.55 per participant from Google vs. AUD \$19.89 per participant from Facebook). One group is using Facebook to implement respondent-driven sampling (Decide2Quit.org); results are forthcoming (Sadasivam et al., 2013a,b). Another group showed that participants recruited to smoking cessation clinical trials through Facebook did not differ from those recruited through more traditional means on smoking characteristics or demographics other than age; Facebook recruits were younger (Frandsen et al., 2014).

A few studies have reported on Facebook recruitment of young adults; most have been cross-sectional survey studies—on post-traumatic stress; (Chu and Snider, 2013) general health; (Fenner et al., 2012) sexual health; (Ahmed et al., 2013; Young et al., 2013) tobacco; (Ramo and Prochaska, 2012) and other substance use (Bauermeister et al., 2012)—with one longitudinal intervention trial, promoting sexual health (Nguyen et al., 2013). In a national online survey study of young adult smokers, a Facebook ad campaign reported a cost of \$4.28 per valid, completed survey (Ramo and Prochaska, 2012), which was more cost-effective than buying ads on other websites (\$43 per completed survey) or recruiting via a survey sampling company (\$19 per completed survey), and was better targeted with more valid results than free advertisements on Craigslist. (Ramo et al., 2010) While Facebook has demonstrated utility as a channel for reaching young adult smokers age 18 to 25, engaging this same group in a cessation intervention is anticipated to be more challenging, given the greater time commitment of longitudinal research and possible expectations inherent in a treatment study.

To provide further understanding of the functionalities and efficiency of social media for health intervention research recruitment, the current study reports on a Facebook ad campaign targeting young adults for a smoking cessation study. This study reports on recruitment methods, time, and cost; examines ad types that were more or less successful; and presents characteristics of the participants ultimately receiving the intervention.

2. Material and methods

2.1. Participants

The study aimed to recruit men and women who were English literate and 18 to 25 years of age, who indicated that they go on Facebook 4 or more days per week, and had smoked 100 or more cigarettes in their lives and currently smoked at least 1 cigarette per day on 3 or more days of the week. Intention to quit was not required for study participation. Access to a camera through phone or computer was required for bioconfirmation of nonsmoking status during the trial. All participants reporting no smoking in the past 7 days at follow-up assessments were sent saliva cotinine test strips and asked to send video or pictures to study staff showing them collecting a saliva sample and the result of the cotinine test.

2.2. Facebook recruitment campaign

Using consumer and target (young adult) marketing strategies, and strategies found to be successful in previous recruitment of smokers for clinical trials (Free et al., 2011; Schnoll et al., 2011), ad content messaging was targeted using the following themes: general/informative (e.g., “Looking for people who smoke. Join and you can get up to \$180. Click here to learn more.”); a call to action (e.g., “Smoking Intervention! No matter what your status is, Tobacco Status Project values you! Join & you may get \$180”); scarcity (e.g., “UCSF Smoking Research. Only a few spaces left in Tobacco Status Project. Click to see if you are eligible.”); social norms (e.g., “1 in 5 adults smoke. What stat do you want to be? Don't wait! Join the Tobacco Status Project today.”); target those motivated to quit (e.g., “Thinking about quitting? Start with the Tobacco Status Project!”); reused from a previous project with young adult smokers (Ramo and Prochaska, 2012) (e.g., “Smoked recently? Join

the UCSF Tobacco Status Project and earn up to \$180.”). Images were designed to men and women of different ethnicities, and varied in style (cartoon, photography, study logo). Some ads mentioned the study incentive (up to \$180 over 1 year). Our university Internal Review Board approved 21 texts and 22 images and allowed investigators to interchange text and images.

Facebook's Ads Manager program was used from 6/10/13 to 7/29/13 to create ads to appear either in the “newsfeed” (a streaming list of updates from Facebook connections [“friends”] or advertisers) or right-side (far right column) of a user's Facebook page. Ad types available at the time of the campaign and used for the present study included:

- 1) “Standard” ads: appeared only on the right column of a Facebook page. These ads could link to a study's Facebook page or an external website;
- 2) Newsfeed ads: appeared in a user's newsfeed, could be viewed on Facebook's desktop or mobile applications, and could link to either a Facebook page or external website;
- 3) Promoted posts: made it more likely that a post would appear in the newsfeed of those who already “like” a page and could be viewed via mobile technology; and
- 4) Sponsored stories: targeted Facebook friends of users who liked our study Facebook page and indicated that a user's Facebook friend had some connection with our page (e.g., “XX commented on/likes Tobacco Status Project's link”), through right-side or newsfeed posts.

All ads targeted by age (18 to 25), location (U.S.), and language (English). Some standard or newsfeed ads further targeted by “keywords,” or participants' interests specified in their Facebook profiles. Two sets of keywords were used in our campaign, including “Cigarette,” “Tobacco,” and “Smoking” (broad targeting), or broad targeting keywords and “Nicotine,” “Health effects of tobacco,” and “Electronic cigarette” (specific targeting). Standard and newsfeed ads included a short headline, a picture, a description of the study (up to 90 characters) and a link to the study's online screening survey conducted through Qualtrics software (external website) or the study's public Facebook page with information about the study and links to the external screening survey. All ads met Facebook's advertising size and word count specifications in June 2013 (Facebook, 2013). Images could not include more than 20% text, and advertising content could not include sale or promotion of alcohol, drugs or tobacco. All ads were reviewed and approved by Facebook staff before they could be run. In some cases, ads were initially rejected by Facebook and needed to be revised before they could be run. This was always due to imaging including more than 20% text, and with small changes to image/text size we were able to get all IRB-approved images approved by Facebook.

A daily spending limit could be specified for each ad and for the entire campaign. The likelihood that a given ad was shown on a target user's page was determined by an algorithm managed by Facebook that incorporated the ad's prior success, competition from other ads in the marketplace, the spending limit, and in some cases, whether the user was a friend of someone who already had a connection with our study Facebook page (e.g., Promoted posts, Sponsored stories). Bids could be made for either ad impressions (views by Facebook users) or clicks on an ad, and we only specified paying for clicks in this campaign. The program “optimized” the daily spending limit for each ad throughout the campaign—i.e., ads that yielded more clicks were shown more, in order to maximize clicks throughout the life of the campaign.

It was not possible to link specific ad impressions and clicks to study enrollment. Facebook's advertising program has a feature called “conversion tracking” that allows advertisers to link clicks on a website (e.g., our consent form) to a specific ad. Though used successfully by our group in the past (Ramo and Prochaska, 2012), this tracking feature did not function properly in the current evaluation. For example, statistics for a given ad differed extremely when viewed by staff at the same

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