Original Paper

The Reach of the "Don't Fry Day" Twitter Campaign: Content Analysis

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Abstract

Background: Skin cancer is the most common cancer in the United States, disproportionately affecting young women. Since many young adults use Twitter, it may be an effective channel to communicate skin cancer prevention information.

Objective: The study aimed to assess the reach of the National Council on Skin Cancer Prevention (NCSCP)'s 2018 *Don't Fry Day* Twitter campaign, categorize the types of individuals or tweeters who engaged in the campaign, and identify themes of the tweets.

Methods: Descriptive statistics were used, and a content analysis of Twitter activity during the 2018 *Don't Fry Day* campaign was conducted. The NCSCP tweeted about *Don't Fry Day* and skin cancer prevention for 14 days in May 2018. Twitter contributors were categorized into groups. The number of impressions (potential views) and retweets were recorded. Content analysis was used to describe the text of the tweets.

Results: A total of 1881 Twitter accounts, largely health professionals, used the *Don't Fry Day* hashtag, generating over 45 million impressions. These accounts were grouped into nine categories (eg, news or media and public figures). The qualitative content analysis revealed informative, minimally informative, and self-interest campaign promotion themes. Informative tweets involved individuals and organizations who would mention and give further context and information about the #DontFryDay campaign. Subthemes of the informative theme were sun safety, contextual, and epidemiologic information. Minimally informative tweets used the hashtag (#DontFryDay) and other types of hashtags but did not give any further context or original material in the tweets. Self-interest campaign promotion involved businesses, firms, and medical practices that would utilize and promote the campaign to boost their own ventures.

Conclusions: These analyses demonstrate the large potential reach of social media public health campaigns. However, limitations of such campaigns were also identified, for example, the relatively homogeneous groups actively engaged in the campaign. This study contributes to the understanding of the types of accounts and messages engaged in social media campaigns utilizing a hashtag, providing insight into the messages and participants that are effective and those that are not to achieve campaign goals. Further research on the potential impact of social media on health behaviors and outcomes is necessary to ensure wide-reaching implications.

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Introduction

Background

Skin cancer is the most common form of cancer in the United States, with nearly 5 million people receiving treatment every year [1]. The average cost of treating skin cancer increased from US $3.6 billion dollars to US $8.1 billion dollars annually between 2002 and 2011 [2]. Melanoma is the deadliest form of skin cancer, resulting in approximately 9000 deaths annually, with rising incidence over the past 30 years. The link between a person's risk of skin cancer and either sunburn or indoor tanning has been well established [3-5].

Even though most skin cancers are preventable, ultraviolet (UV) exposure from both sun and indoor tanning remains common. About 37% of adults in the United States reported getting a sunburn in the past year, indicating inadequate sun protection behavior [6]. It is especially common for young adults to expose themselves to large amounts of natural and artificial UV rays, without proper skin protection (eg, wearing adequate sunscreen). For example, approximately 1 in 3 young, white women, aged 16 to 25 years, has engaged in indoor tanning, with rates as high as 40% among adolescent girls [1,7].

The National Council on Skin Cancer Prevention (NCSCP) [8] is a group of over 45 organizations, agencies, and associations of researchers, clinicians, and advocates, with the goal of having a united voice to prevent skin cancer through education, advocacy, and awareness. Core members include the American Academy of Dermatology, American Cancer Society, Melanoma Research Foundation, and Skin Cancer Foundation. To address the rising rates of melanoma and publicize the dangers of UV exposure, the NCSCP created a public awareness campaign in 2009 called *Don't Fry Day* [9]. *Don't Fry Day*, the NCSCP's foremost activity, occurs annually the Friday before Memorial Day, to encourage sun safety awareness and proper sun protection behaviors, such as seeking shade, wearing and reapplying adequate sunscreen, and avoiding tanning. A committee of members runs the campaign, and all member organizations are asked to participate by promoting skin safety among their constituents, via traditional and social media and other means.

The *Don't Fry Day* campaign is not limited to one media channel, but because of the internet's accessibility and ease of use, the Web-based campaign that includes Twitter has been an increasing focus in recent years. As social media has become a major source of information and news for US adults, especially young adults, it is an ideal platform to reach the nearly 88% of this population who use social media and are also more likely to engage in unsafe UV exposure activities [10]. Nearly 45% of adults on the Web use Twitter, with close to 20% of adults using it on a daily basis [10,11], and Twitter has been shown to be amenable to public health surveillance, research, and intervention [12]. Previous research has examined the public health surveillance potential of Twitter, including tracking influenza rates [13,14], tobacco surveillance [15], and vaccination narratives following measles outbreaks [16]. Others have shown the potential of Twitter in sharing health information on antibiotics [17]. Although health organizations' use of Twitter

for health promotion and public engagement has been explored more generally [18,19], few studies have explored the dissemination of health campaigns on Twitter [20,21]. A notable exception is the examination of e-cigarette public health campaigns and opposing campaigns in real time [22].

Objective

This study was conducted to assess the reach of the *Don't Fry Day* 2018 campaign on Twitter, categorize types of individuals or tweeters who are engaging in the campaign, and identify themes of the tweets.

Methods

Overview

Twitter is a social media platform that allows users to send and read "tweets" or messages that are limited to 280 characters in general and larger for quotes. Users view tweets in their Twitter timelines, and they can send, reply, or retweet tweets to individuals who are "following" them. Twitter users can use a "hashtag" (ie, #) to engage in trending topics and participate in ongoing conversations related to the topic. For this analysis, the hashtag *DontFryDay* was used to track the relevant conversation and identify and categorize participants. Non-English tweets were excluded.

A service was contracted to provide analytics across multiple social media platforms. A snapshot report provided the estimated reach, estimated exposure, level of activity, contributors, and tweets associated with a hashtag over a time period by utilizing the service's unique algorithm [23]. Estimated reach represents the potential size of the audience, by counting the number of unique Twitter accounts that received that particular tweet or hashtag. Estimated exposure, or impressions, aims to capture the total number of actual views, counting the total number of times the tweet was seen. The level of activity represents active engagement, such as replying to a tweet, quoting a tweet, and/or retweeting. We queried a snapshot report tracking *#DontFryDay* during a 14-day period around *Don't Fry Day*, from May 18 to June 1, 2018, to capture activity before the designated day and any activity shortly after Don't Fry Day, which occurred on May 28, 2018. The campaign comprised 83 tweets from the NCSCP during the month of May.

Contributor Categorization

Each Twitter user has a Twitter handle or username (eg, @JaneDoe). Each handle was categorized as one of the following: (1) government-affiliated account (federal); (2) government-affiliated account (state/local); (3) nongovernmental organization (eg, NCSCP; health); (4) cancer/health/medical center (eg, Mass General Hospital Center); (5) news/media organization; (6) public figure (verified account, ie, "an account of public interest that is authentic") [24]; (7) individual (nonverified account); (8) businesses (eg, dermatology clinic); (9) other/unknown. These categories were created on the basis of a review of a random sample of 100 accounts who tweeted with the hashtag, in addition to consultation with the study team and using previous analyses as a guideline. An interrater reliability analysis using the Kappa statistic was performed to determine consistency among raters. The interrater reliability

for raters was found to be kappa = 0.92, which is almost perfect agreement between raters. Categorization was completed by 3 different coders, with one coder reviewing a random sample of 20% of the categorization. If a coder was unsure about who the tweeter was or how to classify the account, a qualitative consultant provided adjudication. The number of tweets, retweets, and potential impressions, including the hashtag, were also recorded. Potential impressions show how many individuals' timelines the tweet was delivered to, and this acts as a measure of views.

Content Analysis

Qualitative manual coding of tweets allowed for exploration of themes across the tweets. Tweets that were included in the sample included initial tweets, reply tweets, and quote tweets. These 3 subcategories all have content that could be thematically analyzed. Only the written content of the tweets was analyzed. Links and pictures attached to each tweet were excluded. A total of 2 researchers analyzed the remaining tweets, following standard guidelines for thematic analysis, which involves phases of familiarizing one's self with the data, to generating initial codes to searching, reviewing, and naming themes [25]. Utilizing NVivo 9 software (QSR International), the researchers moved from narrow units of analysis (eg, significant content) to broader units (eg, themes) that were evident across the tweets. Initial coding was often descriptive, with preliminary codes including "sun safe behaviors," "skin cancer," "date reminder," and "delayed consequences." Through the inductive, iterative process of recoding, condensing, and creating new codes, the main themes and associated subthemes were collectively agreed upon by the researchers. These themes are representative of the repeated patterns of meaning in the tweets. The researchers coded themes for each type of tweet independently; thereafter,

they collectively resolved the codes across the tweet categories [26]. The researchers then collectively reached consensus on the main themes and associated subthemes. Tweets could be coded in more than one category.

Results

Categorization

A total of 1881 Twitter accounts used the hashtag during the 14-day period. Unverified accounts was the largest category, with 819 tweets generating 1,689,810 impressions, but their tweets only resulted in 78 retweets. A total of 255 business accounts tweeted the hashtag, with 935,462 impressions and 686 retweets. A total of 183 health organizations participated in the campaign, resulting in 13,645,339 impressions and 552 retweets. A total of 144 cancer, health, and medical centers used the hashtag, had 140 retweets, and had 2,336,928 impressions. A total of 88 state government entities used the hashtag, generating 70 retweets and 639,291 impressions. There were 70 news organizations, with 20,354,043 impressions and 113 retweets. A total of 33 federal government entities used the hashtag, resulting in 7,627,454 impressions and 308 retweets. Owing to lack of self-identification, changes in privacy settings, account suspensions, or account deletions during categorization, 259 profiles could not be categorized. Those accounts left 9,521,083 impressions and 106 retweets. Table 1 summarizes the results.

The qualitative thematic analysis resulted in three major themes across the tweets: informative campaign promotion, minimally informative campaign promotion, and self-interest promotion. A summary of each theme is provided in Textbox 1, highlighting a few representative tweets from public-facing accounts.

Table 1. Categorization of accounts.

Type of account	Contributors (N=1881), n (%)	Impressions (N=59,661,319), n (%)	Retweets (N=2071), n (%)
Unverified individuals	819 (43.54)	1,689,810 (2.83)	78 (3.76)
Businesses	255 (13.55)	935,462 (1.56)	686 (33.12)
Nongovernmental organizations (health)	183 (9.72)	13,645,339 (2287)	552 (26.65)
Cancer/health/medical centers	144 (7.65)	2,336,928 (3.91)	140 (6.76)
Government-affiliated (state/local)	88 (4.67)	639,291 (1.07)	70 (3.38)
News/media	70 (3.72)	20,354,043 (34.11)	113 (5.45)
Government-affiliated (federal)	33 (1.75)	7,627,454 (12.78)	308 (14.87)
Verified/person of interest	30 (1.59)	2,911,909 (4.88)	18 (0.86)
Other/unknown	259 (13.76)	9,521,083 (15.96)	106 (5.11)

Textbox 1. Paraphrases and excerpts of tweets of the three subthemes.

Informative campaign promotion

- "May 25 is #DontFryDay - Slip on a long-sleeved shirt…"

- "It's #DONTFRYDAY!...One in 5 Americans will get skin cancer before age 70..."

- "...Before you hit the beach or BBQ this weekend, remember to protect yourself. #DontFryDay"

- "…the rays of the sun get through even when it's overcast. Use sunscreen. #DontFryDay"

- "Sunburn as a kid could lead to skin cancer later in life...Today and everyday is #DontFryDay"

Minimally informative campaign promotion

- "Show us your #SunSafeSelfie #skincancer #dontfryday..."

- "WHAT'S HAPPENING THIS WEEK?...National Don't Fry Day..."

- "Today is #DontFryDay!"

- "May 25, 2018 is: #DontFryDay…"

- "#WackyHolidays:...Don't Fry Day

Self-interest promotion

- "…once again that [redacted] has been named to the Best...#Sunscreens… #DontFryDay..."

- "…are you wearing your #sunscreen today? #DontFryDay...contact your [redacted] provider for a skin scan!"

- "Make your own shade on #DontFryDay with one of our UPF 50+ sun protection umbrellas..."

- "...#DontFryDay is in TWO days! We're partnered up with [redacted] to bring you the coolest #GIVEAWAY ever! Enter on our FB post..."

- "...Our 3 piece travel set includes a drinking bottle, face spray and sun cream...#DontFryDay…"

Informative Campaign Promotion

The major theme from the sample was informative campaign promotion. These tweets involved individuals and organizations who would mention and give further context and information about the *#DontFryDay* campaign. Within this category, there were three distinct subthemes that the researchers identified. The first was a promotion of sun-safe behaviors. This included encouraging others to wear sunscreen and the correct level of Sun Protective Factor protection, as well as other behaviors, such as seeking shade, avoiding the sun in peak hours, and wearing eye protection. A second subtheme was the use of temporal, location, or activity-related contexts. This included reminding individuals of the designated day (the Friday before Memorial Day, May 25), suggesting staying out of the sun during peak UV hours, and mentioning specific outdoor activities, such as hiking or going to the beach. Other tweets also included local weather conditions for the region. There were also several tweets that highlighted and warned against the dangers of indoor tanning. The third subtheme involves the use of epidemiological information and facts as part of the campaign promotion. Examples include the rates of skin cancer among certain age groups, the correlation between sunburns and skin cancer later in life, and the high number of skin cancer diagnoses. Textbox 1 provides samples of this type of tweet.

Minimally Informative Campaign Promotion

The second main theme of the tweets comprised minimally informative campaign promotion. This includes tweets that used the hashtag, *#DontFryDay*, and other types of hashtags, but these did not give any further context or original material in the tweets. These tweets often had other hashtags that were related to the campaign, such as "#skincancer." Although these tweets increased the reach and traffic to the campaign, the content did not provide more substantial information about the campaign itself, such as the goals of the campaign or contextual information to support hashtag inclusion. Textbox 1 provides samples of this type of tweet. It is possible that these tweets included links, videos, and pictures, which would have made them be considered more informative.

Self-Interest Promotion

The third theme that emerged across the tweets was self-interest promotion. Businesses, firms, and medical practices would utilize and promote the campaign as a way to boost their own ventures. Businesses would promote products that could be part of sun-safe behaviors, such as sunscreen, beach umbrellas, and sunglasses. Other organizations used the campaign to publicize events, such as sporting events and zoo attendance, or more general offerings, such as hiking and camping opportunities. Some medical practices used the campaign to advertise for their services, such as skin cancer screenings. Textbox 1 provides samples of this type of tweet.

Discussion

Principal Findings

Comparable with last year's results [27], the largest category of participants were individuals from the general public (44%), but their tweets were not retweeted, and their reach was pale in comparison with the other categories. It is important to note that many of the individual accounts belonged to self-identified

health professionals who are likely already aware of the dangers of excessive and unprotected UV exposure. Owing to the data collection and analysis limitations, it is unknown whether their followers are the target population that could benefit most from this campaign. News and media organizations accounted for most of the impact, with over 20 million impressions. A large media organization generated over 17 million impressions with one tweet because of the large number of followers (approximately 16.8 million). Interestingly, the account is CNN en Espanol, who tweeted the message in Spanish. However, large numbers of impressions did not necessarily translate into retweets. Retweeting information, specifically in the campaign in this study, is a way through which information is diffused through different social networks and organizations. Previous work, as explored, showcased the different motivations for retweeting, such as to show approval, to argue, to gain attention, or to entertain [28]. Retweeting can be a powerful tool for widespread diffusion of information, and retweeting can be a measure of viral research of information, as messages with many retweets are considered to be the most influential [29].

A thematic analysis of initial tweets, reply tweets, and quote tweets resulted in three main themes, with several subthemes. These themes were not mutually exclusive, as many quotes would combine two or more of the themes and subthemes. For example, some tweets encouraged the use of specific sunscreens or sun-safe products, which would fall into the informative campaign promotion and the self-interest promotion themes. This combination seemingly would improve on the visibility of the tweets and give more credibility to the tweet when paired with a legitimate public health campaign. Overall, the campaign had high levels of informative campaign promotion with individuals and organizations, especially as many of the tweets were from the list of suggested content from the Council [8]. Although the minimally informative campaign promotion did not provide context, it still generated traffic and attention for the campaign. Twitter has become a way to promote businesses and organizations by engaging in larger campaigns that can boost their own interests.

Strengths and Limitations

There are several limitations of this study. First, the analytic material was limited to standard text and user profiles, whereas, links, pictures, videos, and other hashtags were excluded from the analysis. Second, thematic analysis did not include the comprehensiveness of messages either in terms of length or content. For instance, some tweets comprised simple recommendations to use sunscreen when outside, whereas other tweets advocated for a multi-faceted behavioral approach beyond sunscreen (eg, wearing long-sleeved clothing, staying in the shade). Third, non-English tweets were omitted from the qualitative analysis, and we did not examine whether the messages had universal appeal or were limited to a particular population or culture. Thus, the extent of the campaign's reach for a diverse audience cannot be determined. Finally, the public health campaign examined here was time limited by the specific date around the holiday weekend and did not capture organic activity that could have occurred earlier, before the official "holiday" or around the summer holidays.

Further research is needed to better implement future public health Twitter campaigns. For example, it would be beneficial to include links, pictures, videos, and multiple hashtags in analyses. Assessing non-English tweets and the cultural context of tweets could be quite informative. Importantly, further research could explore the impact of the different types of tweets identified, that is, how they impacted the reach and engagement of the tweets. For example, examining the impact of single versus multiple calls to action would be useful. Future analyses may also include the valence of tweets. For instance, some of the tweets play on fear-based motivations, whereas others more positively encourage healthy behaviors.

The themes observed in this qualitative analysis demonstrate the large potential reach of social media public health campaigns. In today's viral media environment, research on the potential of social media on health behaviors and outcomes is an emerging field, with possibly wide-reaching implications. However, limitations of such campaigns were also identified, for example, the relatively homogeneous groups actively engaged in the campaign. This further supports the "echo chamber" effect, observed in other Twitter analyses [30-32]. A better understanding of how and why public health campaigns are shared on social media forums, such as Twitter, can lead to a more tailored message and approach, with the goals of having a far-reaching campaign that will be visible to the targeted communities.

Conflicts of Interest

None declared.

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Abbreviations

NCSCP: National Council on Skin Cancer Prevention

XSL•FO
RenderX