Original Research

The content of social media's shared images about Ebola: a retrospective study

CrossMark

E.K. Seltzer [a,*], N.S. Jean [a], E. Kramer-Golinkoff [a], D.A. Asch [a,b], R.M. Merchant [a]

[a] Penn Medicine Social Media and Health Innovation Lab, University of Pennsylvania, Philadelphia, PA 19104, USA
[b] The Center for Health Equity Research and Promotion, Philadelphia Veterans Affairs Medical Center, Philadelphia, PA 19104, USA

ARTICLE INFO

ABSTRACT

Objective: Social media have strongly influenced awareness and perceptions of public health emergencies, but a considerable amount of social media content is now carried through images, rather than just text. This study's objective is to explore how image-sharing platforms are used for information dissemination in public health emergencies.

Study design: Retrospective review of images posted on two popular image-sharing platforms to characterize public discourse about Ebola.

Methods: Using the keyword '#ebola' we identified a 1% sample of images posted on Instagram and Flickr across two sequential weeks in November 2014. Images from both platforms were independently coded by two reviewers and characterized by themes. We reviewed 1217 images posted on Instagram and Flickr and identified themes.

Results: Nine distinct themes were identified. These included: images of health care workers and professionals [308 (25%)], West Africa [75 (6%)], the Ebola virus [59 (5%)], and artistic renderings of Ebola [64 (5%)]. Also identified were images with accompanying embedded text related to Ebola and associated: facts [68 (6%)], fears [40 (3%)], politics [46 (4%)], and jokes [284 (23%)]. Several [273 (22%)] images were unrelated to Ebola or its sequelae. Instagram images were primarily coded as jokes [255 (42%)] or unrelated [219 (36%)], while Flickr images primarily depicted health care workers and other professionals [281 (46%)] providing care or other services for prevention or treatment.

Conclusion: Image sharing platforms are being used for information exchange about public health crises, like Ebola. Use differs by platform and discerning these differences can help inform future uses for health care professionals and researchers seeking to assess public fears and misinformation or provide targeted education/awareness interventions.

© 2015 The Royal Institute of Public Health. All rights reserved.

* Corresponding author. 423 Blockley Hall, Philadelphia, PA 19104, USA. Tel.: +1 215 746 1161.
  E-mail address: seltzer@uphs.upenn.edu (E.K. Seltzer).

Introduction

The first cases of Ebola were reported almost 40 years ago in Nzara, Sudan, and Yambuku, Democratic Republic of Congo.[1,2] The most recent outbreak in West Africa however has elevated consciousness of the disease in the United States (US) and around the world.[3,4] As of December 2014, there have only been two Ebola deaths in the US, compared to over 5000 in West Africa. In a Gallop poll released on November 17th 2014, however, Ebola ranked third among Americans' top health care concerns, at 17%.[5] Almost one in six reported Ebola as the nation's top health problem, while the number one and two concerns were health care costs (19%) and access (18%).[5]

The media, U.S. midterm elections, varying responses from government and health care organizations, and the pernicious nature of the disease itself have all helped to shape public perception of current Ebola outbreak.[4,6] Social media has changed how news and information is digested around the world and it has played a pivotal role in prior public health emergencies.[6] For example after Haiti's 2010 earthquake, social media was used to link health care providers in need of supplies with sources that had supplies.[7] Ebola represents a different kind of public health emergency because it is contagious.

Social media are also different now. Social media now often takes the form of images rather than words. On December 10th 2014, Instagram announced it surpassed Twitter in popularity, with over 300 million active users compared to Twitter's 284 million users last quarter.[8] In 2013, a Pew Research Internet Project survey found that 54% of adult Internet users post original photos or videos; 47% of users repost and share images that they have found on the Internet; and 62% of Internet users have done at least one of these activities.[9] Tweets using Pic.Twitter.com images are 94% more likely to be shared than posts containing only text.[10] Images represent an important and growing means of communication with the general public.

Images represent an area ripe for study as a potential channel for communication about important public health events and topics, and for population health surveillance. We sought to evaluate public images from two popular image sharing platforms, Instagram (>300 million users) and Flickr (>92 million users), to characterize content related to Ebola, and to compare the differences between the two platforms.[11,12]

Methods

This was a retrospective review of social media images posted on publicly accessible online image-sharing platforms, Instagram and Flickr. Instagram was launched in 2010, and its stated intent is to capture and share moments as a global mobile photo-sharing social networking service. In 2012, Instagram was acquired by Facebook. Flickr was established in 2004 and its stated intent is an image hosting website widely used by photo researchers and bloggers to host images embedded in blogs and social media.[11]

We used the hash tag and term '#ebola' to perform a keyword search on Instagram and Flickr. Using this web-crawling approach, we then retrieved a 1% sample of sequential posts returned over the two weeks between November 3–16, 2014. We defined an image as the post, including any text overlaying the image, but did not include comments written about the post in a caption. One hundred of these Instagram and Flickr images were initially reviewed independently by two coauthors (EKS, NS) to determine image themes. Using these themes, an additional 100 images were coded, and no new themes were identified. The correlation coefficient across the two reviewers was 0.96 for the Instagram images, and 0.89 for the Flickr images. The remaining images from the 1% sample were then reviewed and assigned to themes. A third reviewer adjudicated any discrepancies.

Summary statistics were used to describe themes identified from each image-sharing platform, Instagram and Flickr. This study received exempt status from the University of Pennsylvania Institutional Review Board.

Results

We identified 1217 images. From this sample, nine themes emerged: images of health care workers and professionals 308 (25%), West Africa 75 (6%), the Ebola virus 59 (5%), artistic renderings of the Ebola virus 64 (5%) and images unrelated to Ebola or its sequelae 273 (22%). Also identified were images with accompanying embedded text related to Ebola, reflecting facts 68 (6%), fears 40 (3%), politics 46 (4%), and jokes 284 (23%).

Themes differed across image sharing platforms. Jokes were the most prevalent theme on Instagram 255 (42%) [Table 1]. Joke images primarily related to: political jokes (e.g. the cure for Ebola is voting republican/democrat), mocking of fearful people (e.g. everyone with the flu is going to think it is Ebola), racial stereotypes, costumes (e.g. Halloween), and implications that something or someone has Ebola (e.g. an image of expired milk with #ebola). Of these joke categories, the most common were users posting that someone or something has Ebola 89 (35%) and users mocking people fearful of Ebola 64 (25%) [Fig. 1]. Many of the joke images were in the form of memes.[13] Another common theme identified on Instagram was the use of the #ebola tag to post images seemingly unrelated to Ebola or its sequelae 219 (36%) – presumably to use the provocative tag to garner views.

In contrast, Flickr images primarily represented health care workers and other professionals with 281 (46%) providing care or other services. Also represented were images representing West African countries 72 (12%) (e.g. landscapes, people, maps) and images of actual Ebola virus, 57 (9%).

Discussion

This study has two main findings. First, popular visual social media platforms are frequently used for information exchange about Ebola. These images provide a view into public fears, sentiment and gaps in knowledge potentially useful for public health professionals. Second, visual social media platforms are being used in different ways. These differences can