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Ebola and Social Media

Kathryn C. Finch

Georgia Southern University, kc01353@georgiasouthern.edu

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ABSTRACT

- ❖ **Objectives:** We systematically reviewed existing research pertinent to Ebola and social media, especially to identify the research questions and the methods used to collect and analyze social media.
- ❖ **Methods:** We searched six databases (ACM Digital Library, EBSCOhost, LILACS, PubMed, SciELO, and Web of Science) for research articles pertinent to Ebola and social media. We extracted the data using a standardized form, and we evaluated the quality of the included articles using Downs and Black's Checklist and/or the CASP Qualitative Research Checklist.
- ❖ **Results:** A total of eleven articles were included in the main analysis: seven on Twitter with one also including Weibo, three on YouTube, and one on Instagram and Flickr. All the studies were cross-sectional. Studies on Twitter varied greatly on the research questions and the methods used. Ten of the eleven articles studied one or more of these three elements of social media and their relationships: (a) Themes or topics of social media contents, (b) Meta-data of social media posts (such as frequency of original posts and re-posts, and impressions) and (c) Characteristics of the social media accounts that made these posts (such as whether they are individuals or institutions). One paper studied how external information (news videos) influenced Twitter traffic. Content analysis methods included text mining (n=3) and manual coding (n=1). Two studies involved mathematical modeling. All three YouTube studies and the Instagram/Flickr study used manual coding of videos and images respectively.
- ❖ **Conclusions:** Published Ebola-related social media research focused on Twitter and YouTube. Researchers explored different research questions and methods, but their study design was limited to cross-sectional study. The utility of social media research to public health practitioners is warranted but further research is needed.

OBJECTIVES

- ❖ The aim of this systemic review is to provide clinicians, public health practitioners and policy-makers with a comprehensive overview of the up-to-date-literature on Ebola and social media.
- ❖ We critically appraised the quality and utility of these studies, and identified the gaps in our current understanding that invite further research efforts.
- ❖ In particular, we focused on the research questions and the methods of the studies:
 - ❖ What were the research questions of a given study?
 - ❖ What study design and research methods were used by the researchers to address those questions?
 - ❖ What were the strengths and limitations of these methods in addressing the given research questions?

METHODS

- ❖ We followed the PRISMA Checklist in our review process.¹
- ❖ Literature search
 - ❖ Databases: Web of Science, EBSCOhost, PubMed, Association for Computing Machinery Digital Library, LILACS, and SciELO
 - ❖ Date of Search: October 1, 2015 - November 9, 2015
 - ❖ Search words: "Ebola" AND one of the following: media, Facebook, Flickr, Instagram, Google, Google+, Line, Myspace, Pinterest, Tumblr, Twitter, WeChat, Weibo, WhatsApp?, Vine, Youku, and YouTube
 - ❖ Limits: Papers published since 2013; no language limits
- ❖ Inclusion criteria: We included any paper that met all 3 of the following criteria:
 - ❖ The paper either presented original analysis of social media data or presented original evidence of the implementation of social media platforms as tools of public health communication, education or intervention.
 - ❖ The topic of the paper was the 2014-15 Ebola epidemic in West Africa, including the travel-associated cases (and subsequent small outbreaks) in Nigeria, Europe and North America.
 - ❖ The papers were published in peer-reviewed journals
- ❖ 11 papers were collected for review after further exclusion. (Figure 1)
- ❖ 4 co-second authors worked in 2 pairs to complete data extraction and quality assessment
 - ❖ The Downs and Black's checklist for quality assessment of quantitative studies²
 - ❖ The CASP Checklist for quality assessment of qualitative studies³

RESULTS

- ❖ Social media platforms
 - ❖ Twitter (n=7) (of which one also studied Weibo)
 - ❖ YouTube (n=3).
 - ❖ Instagram and Flickr (n=1).
- ❖ 10 articles investigate one or more of the following:
 - ❖ Themes or topics of social media contents
 - ❖ Meta-data of social media posts (frequency of original posts, re-posts, etc.)
 - ❖ Characteristics of the social media accounts that made these posts (individuals or institutions)
- ❖ All studies were cross-sectional.
- ❖ Data was collected using different sources: NCapture^{4,5}, Topsy⁶, Twitter API^{7,8}
 - ❖ 2 studies did not report their data extraction methods^{9,10}
 - ❖ Text mining^{4,7,9,10} and mathematical mining^{8,9} were also used
- ❖ Quality assessment
 - ❖ Downs and Black Checklist consistently scored low: 4 to 9, out of a maximum 27
 - ❖ CASP Checklist consistently scored high: 7 to 8, out of a maximum 9

CONCLUSIONS

- ❖ Most research papers on Ebola and social media focused on Twitter and YouTube, and all papers were of cross-sectional design. There is a need to expand research to other social media outlets and other study designs.
- ❖ Social media research can help improve public health communication surveillance and emergency response.
- ❖ There is a need to bridge research and practice by bringing the needs of front line health communicators to the attention of researchers and by translating research development into public health routine practice.

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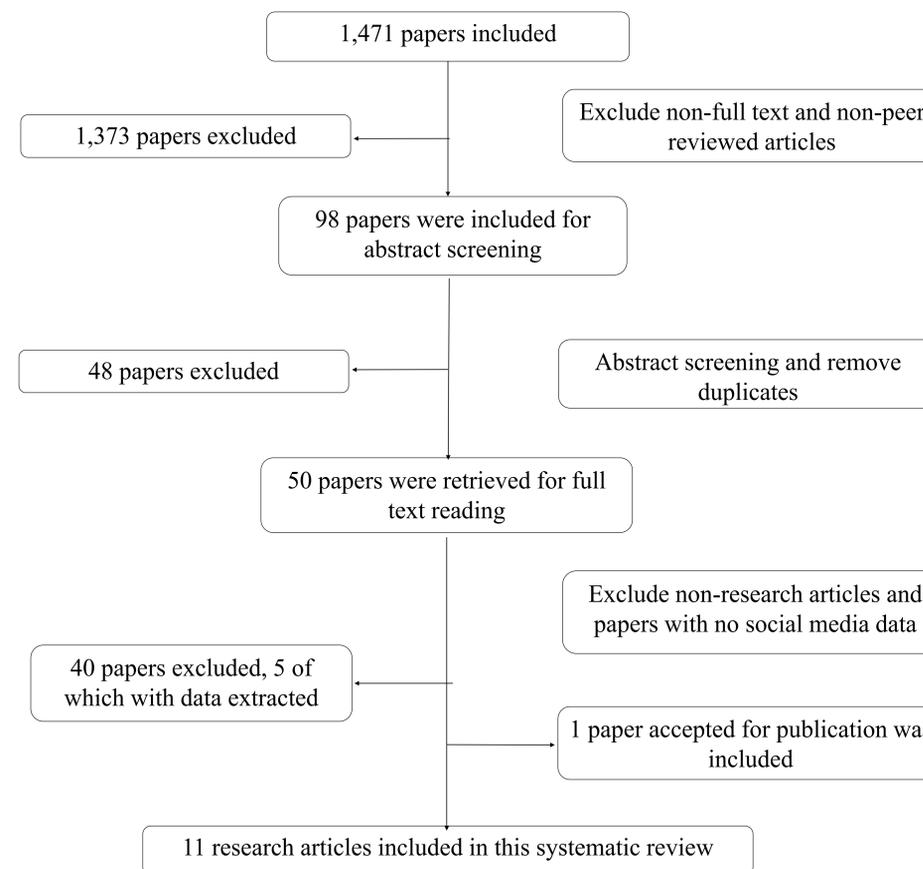


Figure 1. Schematics of literature search, inclusion, and exclusion.