Research Article

Spread of health-related fake news in Tamil social media - A pilot study

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ABSTRACT

Introduction: Fake news is a type of propaganda that consists of deliberate misinformation or hoaxes spread through traditional print and broadcast news media or online social media. Fake news concerning health subject is not a new phenomenon - its roots are probably as old as healthcare itself.

Aim: This study aims to measure the volume of shares concerning health-related fake news in Tamil language social media.

Materials and Methods: Analysis was performed employing the BuzzFeed Enterprise Application available through its website. BuzzFeed is a social media analytics and curation tool for content marketers. The data were obtained for 15 most commonly shared pages concerning four keywords, namely vaccinations, oral cancer, gum disease, and dental caries from May 1, 2018, to May 15, 2018, in Tamil language, the local vernacular.

Results: The topic most contaminated with fake news was vaccinations (80%) followed by oral cancer and gum disease (both in 60%). Altogether, links containing fake news were shared 272 times in 15 days and accounted for 40% of the studied material.

Conclusion: Action could be taken to scientifically evaluate sources of the most frequently shared medical myths. As shown above, some topics were generally free of fake news, whereas others were extremely biased and filled with fallacies. Thus, an extensive educational campaign (not only in social media) for the latter should be implemented.

Keywords: Oral health, Internet, Social media.

INTRODUCTION

Fake news is a type of propaganda that consists of deliberate misinformation or hoaxes spread through traditional print and broadcast news media or online social media.[1,2,3] Fake news concerning health subject is not a new phenomenon - its roots are probably as old as healthcare itself.[2] As a result of the radio and television revolutions and an exponential increase in global internet usage, the potential range of harm is brought to a totally new level.[4]

Two main motives behind fake news are financial and ideological. The problem is many people choose the wrong options based on misinformation or they continue to uphold erroneous beliefs and biased opinions, accepted as dogma, despite irrefutable evidence to the contrary.[4] The explosion of health-related information leads to misinterpretation, and general population has a tendency to trust and relate to high profile people, elaborate websites, thousands of likes and followers on social media, and heart-rending anecdotes, rather than dry and impersonal medical data with no relatable faces attached to the text. In this internet-globalized media, to which anybody can contribute, intrusions into our daily life have also become an inevitable phenomenon. Although we have always had our own myths and stories that shape our understanding and behavior, the shear volume of the online media drowns out the competing voices of rationalism and truth.[5] There is also an inherent problem with journalism. Everyday, the media delivers swathes of health-related information that can swiftly trigger fear or incite us to change our habits overnight.[4] From the headlines about the limitations of vaccines to the alleged ills of gluten, sugar, and genetically modified foods, and chance of getting cancer from acidic diets, the onslaught of fake news can be overwhelming and stands a better chance of significant spread than real news.[4]

Apart from the regular conventional mass media such as television, newspaper, and radio, and social media such as Face book®, Twitter®, WhatsApp®, and YouTube® channels are part of our day to day life. Social media plays a major and key role for developing and conveying such type of news. Fake, misleading, and over-interpreted health news in social media is a potential threat for public health.

In response to these rapid changes, we hereby present a pilot study to measure the volume of shares concerning health-related fake news in the Tamil language social media.

MATERIALS AND METHODS

Analysis was performed employing the BuzzFeed Enterprise Application available through its website. "BuzzFeed" is a social media analytics and curation tool for content marketers. For each link, the BuzzFeed returns the data on volume of Facebook® engagements (defined as a total number of likes, comments, and shares in this portal), Twitter® (a microblogging site), and YouTube® shares.

The data were obtained for 15 most commonly shared pages concerning four keywords, namely vaccinations, oral cancer, gum disease, and dental caries from May 1, 2018, to May 15, 2018, in Tamil language, the local vernacular. Each link was independently reviewed by two of the authors.

In this research, the data were categorized into the following nine categories[6]:

- Fabricated news - completely fictitious medical facts or events (e.g., stories related to disease negation).

- Manipulated news - generally true basic information, but false conclusions or recommendations coming from over-interpreted or overly extrapolated results (e.g., data from *in vitro* studies presented as a readily available option for patients).
- Advertisement news - stories about diseases, often critical toward conventional therapies, designed to advertise "miracle products" (e.g., alternative treatments).
- Irrelevant news - not directly related to health (e.g., name of the disease used as a metaphor).
- Sufficient news - generally true and evidence-based information about the disease.
- Satire or parody ("no intention to cause harm but has potential to fool").
- False connection ("when headlines, visuals, or captions don't support the content").
- Misleading content ("misleading use of information to frame an issue or an individual").
- False context ("when genuine content is shared with false contextual information").

However, the final data were dichotomized as true or false news due to the lack of ambiguity of categorizing data into various types. The veracity of health information found in news was judged by comparing it with medical books available in Tamil languages - a comprehensive Tamil textbook of evidence-based internal medicine.[7]

The interobserver reliability of the content analysis was calculated using Kappa statistics. A number of observed agreements were as high as 90% with Kappa value = 0.875 (95% Confidence interval: 0.838–0.912) and Weighted Kappa = 0.780. For inconsistent rates, the links were reviewed once again and evaluated after having reached a consensus.

This study was conducted after approval of the Institutional Review Board of Ragas Dental College and Hospital.

Statistical Analysis

Data entry was done using Microsoft Excel 2007. Statistical analysis was done using IBM SPSS version 19 for descriptive statistics.

RESULTS

Ultimately, four of the most frequently shared pages were reviewed among the top 15 in each keyword searched. On the whole, Facebook® activities accounted for the majority of total shares and engagements. The topic most contaminated with fake news was vaccinations (80%) followed by oral cancer and gum disease (both in 60%). Altogether, links containing fake news were shared 272 times in 15 days and accounted for 40% of the studied material, the most frequently shared link in the studied population was a story of the miracle cancer treatment, which claimed to cure any cancer in just 100 days. The publisher's website was also

Table 1: Distribution of true and fake health news in Tamil social media.

Keyword	Proportion of true news in top 15 shared links	Aggregated total shares	Total views	Proportion of fake news in top 15 shared links	Aggregated total shares and engagements	Total views
Vaccination	3	15 days - 54	42,239 views	12	23,896 shares 15 days-272	189,972 views
Oral cancer	5	15 days - 26	55,643 views	10	1113 shares 15 days-105	150,068 views
Gum disease	6	15 days - 26	6546 views	9	2367 shares 15 days-165	345,600 views
Dental caries	8	15 days - 26	7659 views	7	24,563 shares 15 days-254	323,600 views

listed more times in the analysis and its links accounted for 94,000 cumulative shares (21% of all fake news).

While typing the keywords on the politico search, there were 2284 search results for vaccination, 346 search results for oral cancer, 78 search results for gum disease, and 9 search results for dental caries. Among the top 15 shared links, 12 were contaminated with the fake news in the field of vaccination, oral cancer had 10 fake links, gum disease had 9, and dental caries had 7 fake links [Table 1]. Among all the social media, YouTube® spreads more fake news (about 70%) than others.

DISCUSSION

Recently, public attention was paid to the presence of the biased health information in media, which can undermine trust in healthcare. Our study is an initial attempt to measure the scale of medical fake news in the Tamil social media. By identifying the scale and patterns of its stream, we can put forward some recommendations to the regulatory and policy authorities. In our material, 65% of the links were assessed as fake news.

A greater part of the shared news was related to alternative medicine, but persistent denial of oral cancer or vaccination was also noted. The battle over fake news in medicine is an emerging issue for public health authorities. It is evident that promising solutions on transformation of social media should emerge since administrators are getting more and more sensitive about fake news issue.[8,9]

In this study, fake news spread significantly more than true ones. Results revealed that during the 15 days of the assessed time period, fake news spread faster and also had increased number of shares. This was seen by the fact that during that 15 day time period, fake news about a vaccination was shared 272 times when compared to true news (*n* = 54).

Social media platforms often criticized for propagating fake news are also stepping up to proactively address the issue.[10] Twitter has proposed a request to the public for a set of current health issues so as to ensure healthy conversation in their platform which in turn would prevent issues such as misinformation, echo chambers, abuse or spam.[11]

Facebook® has also recognized that it needs to play a role in maintaining the integrity of their platform, but nothing formal has been announced other than tweaks to the algorithm which could further enable the spread of fake news.[12]

CONCLUSION

Public health authorities, non-governmental organizations, and their collaborators from the internet technology sector should consider the results of this study as some of our conclusions could be introduced to public health regulations. Actions could be taken to scientifically evaluate sources of the most frequently shared medical myths. As shown above, some topics were generally free of fake news, whereas others were extremely biased and filled with fallacies. Thus, an extensive educational campaign (not only in social media) for the latter should be implemented.

Antidotes to fake news are now emerging. These seem to be offered by those who have the most to lose, including scientists and experts who are ignored, misquoted, or contradicted. For example, the National Science Foundation has funded the research of a project which will enable digital devices to purge fake news stories.

Conflicts of interest

There are no conflicts of interest.

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