

Hashtag usage and its pattern on selected health problems in social media

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ABSTRACT

Background: The use of social media to disseminate major communications particularly for campaigns related to health is becoming much popular. The usage of social media such as Twitter, Instagram, and Facebook is gaining an integral part and also becoming influential in public life. **Objectives:** The objectives of the study were to study the pattern and characteristics of posts related to selected health issues (Zika and Dengue) in social media (Facebook, Twitter, and Instagram) and the factors associated. **Materials and Methods:** The study was cross-sectional and analyzed contents of four health-related posts such as #dengue, #dengue virus, #Zika, and #Zika virus. Public posts related to each were searched from three platforms and assessed separately. Source, publicity, credibility, reach outs, and other characteristics were assessed among each post and comparison also done among the three social media. **Results:** Among the 3346 posts studied, 89.3% (1072) of Facebook posts, 90.6% (1087) of Twitter posts, and 56.6% (535) of Instagram posts were relevant to Zika and dengue. **Conclusion:** Hashtag posts related to health in social media is considered as an effective method for spreading education among the public. Facebook posts were having higher popularity and were having more posts from verified accounts. Posts related to research were more in Twitter.

KEY WORDS: Dengue; Facebook; Hashtag; Instagram; Twitter; Zika

INTRODUCTION

Social media, an incredible invention of social animal has established its place in the minds of the society than anything else. It influences the society and has become the important part of life among people of all age groups. The social media by itself evolved worldwide during the late 90s. The initial part of the 21st century showed the increase access of internet worldwide which laid a foundation for the origin of social media. The initial ones were MySpace, Orkut, LinkedIn, Twitter, YouTube, and Pinterest. The recent ones are Facebook and Instagram now there are thousands of

social media catering to a different population which may be popular or unpopular, smaller or larger or platform based.^[1]

Younger generation contributes a major part of using social media in numerous ways which makes information viral among the public, irrespective of their knowledge and reliability about the information. This alerts the public and triggers them to share the information which indirectly creates awareness to safeguard every individual on their own. This aspect of social media is used as a tool to analyze their impact on selected diseases and to assess the nature of information in various ways such as their source and credibility.

Globally, 50% of the population are using the internet in some of the other way in the beginning of the year 2017, and among them, 18.5% are active social media users. This proportion is increased by 21% compared to the year 2016. Most of the users were frequented in Facebook, Facebook messenger followed by WhatsApp and YouTube.^[1] In India 35% of the population were internet users, and 14% were active social

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media users out of the total population. An increase of 40% in active social media users were reported compared to the previous year. 48% of the internet users access it at least every once in every day. In India also the same pattern of social media user ranks compared to the global pattern.^[2]

In India, social media is mainly comprised of Facebook, WhatsApp, Twitter, and Instagram. At present, Hashtag^[3-5] is used in popular social Medias such as Facebook, Twitter, an Instagram. It was used as a tool in the social media for sharing contents and for getting maximum popularity. Without understanding the importance of this excellent tool, hashtag is being used for sharing irrelevant information which has the tendency to dampen the information on current trending problems of the society.^[6]

To evaluate the impact of health-related problems of society in social media, the study focuses on analyzing the post of all formats produced by various users regarding current trending health problems with hashtag as a prefix. This study is evaluating the characteristics of hashtag campaigns in social media. Dengue virus disease and Zika virus disease are transmitted primarily by *Aedes* mosquitoes.^[7] Our study included posts in social media which use hashtag as a prefix. The posts include images and videos related to dengue (#dengue, #dengue virus) and Zika (#Zika and #Zika virus). In this regard, there are only a few studies^[8,9] conducted worldwide using social media as an effective platform. This study aimed to study the pattern and characteristics of posts related to selected health issues (Zika and Dengue) in social media (Facebook, Twitter, and Instagram) and the factors associated.

MATERIALS AND METHODS

Study samples were searched in each of the three social media (Facebook, Twitter, and Instagram) using hashtag (#) before all these four entities using consecutive sampling method^[10] (#dengue, #dengue virus, #Zika and #Zika virus). Screenshots were used to capture posts. Since the researchers knew English and Tamil, posts were included only from the Language of English and Tamil. Eventually, this helped us to infer the characteristics of posts of an International language and a regional language in India also excluded posts from other languages. A minimum target of 300 recent posts in each entity (#dengue, #dengue virus, #Zika, and #Zika virus) in each social media was fixed during the period of September to October 2017. Finally obtained the total of 3346 posts (projected number was 3600) since the #dengue virus in Instagram was only 46. Out of which, 2942 images and 404 videos were included in the study and these posts were analyzed for the following aspects;

1. Type of the post (whether image or video)
2. Source of post (whether the content was shared by an individual or an organization)

3. Credibility or reliability of the post (whether the shared news or information was true)
4. Language of the post (English or Tamil)
5. Popularity (The posts having more than 50 like as popular)
6. Reason for the post (the reason was categorized as advertisement, research, news, and unknown)
7. Verified post (by identifying the blue tick mark at the end of the name).

The data were entered into the Microsoft Excel software and analyzed using Epi info software for frequencies, percentages, and associations.

RESULTS

Characteristics of the Posts

In this study, out of 3346 posts collected, 2942 (87.9%) posts were images and others 404 (12.1%) were videos. Regarding the language, 3104 (92.8%) posts were in English, and 242 (7.2%) posts were in Tamil. 1210 (36.2%) posts were posted by the individuals, and 2136 (63.8%) were posted by organization. Table 1 represents the overall characteristics of the posts.

Table 1: Characteristics of the posts

Characteristics	Frequency (%)
Type of post	
Video	404 (12.1)
Image	2942 (87.9)
Language	
English	3104 (92.8)
Tamil	242 (7.2)
Credibility	
Yes	2694 (80.5)
No	652 (19.5)
Content	
Ad	313 (9.4)
News	1937 (57.9)
Research	284 (8.5)
Unknown	812 (24.3)
Popularity	
Yes	755 (22.6)
No	2691 (77.4)
Verified	
Yes	527 (15.8)
No	2819 (84.2)
Source	
Individual	1210 (36.2)
Organization	2136 (63.8)

Pattern of Posts Specific to Social Media

Table 2 summarizes the pattern of posts specific to social media. Verified posts were only 527 (15.8%) and 2819 (84.2%) posts were not verified. Among all the total posts, 755 (22.6%) posts have higher popularity (more than 50 Likes) and 2691 (77.4%) posts have low popularity. Content of the post was mostly shared as news 1937 (57.9%), followed by unknown (the reason for sharing the post is not known), advertisement and research. Most of the posts nearly 2136 (63.8%) were posted by organization whereas, 1210 (36.2%) were posted by individuals. Of all the 3346 posts, the information was credible in 2694 (80.5%) posts.

As a target of total 300 posts was made in each social media, the percentage was equal for all, i.e., 25% (each 300) but the post for dengue virus in Instagram was 46 (4.9%) posts only. Hence, it had the least percentage when compared to others, i.e., 4.9%.

Of the total sample analyzed, all of our Instagram posts were not verified, in Facebook 355 (29.6%) were verified and Twitter had 172 (14.3%). Based on popularity, Facebook posts were having higher popularity, i.e., 511 (42.6%) followed by Instagram 232 (24.5%) and Twitter 12 (1%).

Regarding content, nearly 429 (45.3%) posts in Instagram were irrelevant to the topic shared, 214 (22.6%) was shared for advertisement, 246 (26.0%) shared in the view of news, and 57 (6%) shared on the research purpose. Most of the posts shared in the Twitter 869 (72.4%) were news, nearly 176 (14.7%) posts were based on research, unknown posts 117 (9.8%), and advertisement posts 38 (3.2%). In Facebook, nearly 822 (68.5%) post were news, followed by unknown post 266 (22.2%), research 51 (4.2%), and advertisement 61 (5.1%).

Regarding language, nearly 1046 (99.4%) in Instagram were in English compared to Facebook 1046 (87.2%) and Twitter 1118 (93.2%). Tamil post in Instagram, Twitter, and Facebook were 6 (6%), 82 (6%), and 154 (12.8%), respectively. Regarding popularity, Facebook had high popularity posts 511 (42.6%), followed by Instagram 232 (24.5%) and then Twitter 12 (1%). Regarding credibility, nearly 1087 (90.6%) posts in Twitter had high credibility, followed by Facebook 1072 (89.3%) and Instagram 535 (56.6%).

Total posts in Instagram were less because only 46 posts were collected related to dengue virus. In our study all the posts analyzed in Instagram were not verified; Facebook post had higher popularity compared to Twitter and Instagram.

Table 2: Pattern of posts specific to social media

Pattern	Facebook (%)	Twitter (%)	Instagram (%)	P value
Topic				
#Dengue	(300) 25	(300) 25	(300) 31.7	<0.001
#Dengue virus	(300) 25	(300) 25	(46) 4.9	<0.001
#Zika	(300) 25	(300) 25	(300) 31.7	<0.001
#Zika virus	(300) 25	(300) 25	(300) 31.7	<0.001
Verification				
Yes	(355) 29.6	(172) 14.3	(0) 0	<0.001
No	(845) 70.4	1028) 85.7	(946) 100	<0.001
Popularity				
Yes	(511) 42.6	(12) 1	(232) 24.5	<0.001
No	(689) 57.4	(1188) 99	(714) 75.5	<0.001
Reason				
Ad	(61) 5.1	(38) 3.2	(214) 22.6	<0.001
News	(822) 68.5	(869) 72.4	(246) 26	<0.001
Research	(51) 4.2	(176) 14.7	(57) 6.0	<0.001
Unknown	(266) 22.2	(117) 9.8	(429) 45.3	<0.001
Language				
English	(1046) 87.2	(1118) 93.2	(940) 99.4	<0.001
Tamil	(154) 12.8	(82) 6.8	(6) 6	<0.001
Popularity				
Yes	(511) 42.6	(12) 1	(232) 24.5	<0.001
No	(689) 57.4	(1188) 99	(714) 75.5	<0.001
Credibility				
Yes	(1072) 89.3	(1087) 90.6	(535) 56.6	<0.001
No	(128) 10.7	(113) 9.4	(411) 43.4	<0.001

Instagram was peaking in having more number of unknown post an advertisement. Twitter had more number of news and research posts. Nearly 90% of total posts invariable to social media were in English. Posts shared on Twitter had least popularity compared to Facebook and Instagram. Twitter 1087 (90.6%) had high peaks incredible post compared to Facebook 1092 (89.3%) and Instagram 535 (56.6%).

Pattern of Posts Specific to Diseases

After the analysis of the data, there was not much difference between the dengue and dengue virus, Zika and Zika virus, so compilation of dengue and dengue virus as a single entity “Dengue,” Zika and Zika virus as a single entity “Zika.” The data analysis was done and represented in Figs. 1-3. Irrespective of the social media concerned, the images in dengue and Zika were more or less equal, and videos in both of the topic were also same. There were more number of English posts for dengue 1321 (85.4%) and Zika 1783 (99.1%) compared to Tamil 225 (14.6%)/17 (0.9%), which may be due to higher number of English language users compared to the Tamil users in social media.

Comparatively there were more number of news posts for dengue 989 (64.4%) and Zika 948 (52.7%) in relation to advertisement and research posts, research posts were more for Zika 190 (10.6%) compared to the dengue 94 (6.1%). Posts related to Zika were relatively popular compared to the dengue posts. Credibility was more for the dengue posts than Zika. Zika had more number of verified posts compared to dengue. Zika had more number of individual posts than the dengue.

DISCUSSION

Studies of posts related to health issues in social media have focused on the health concerns more than the features in different platforms. Fung *et al.* assessed differences between Instagram and Pinterest in relaying photographic information regarding Zika virus and suggested that Pinterest and Instagram serve as relatively similar platforms for the purpose of Zika Virus prevention communication,^[8] Seltzer *et al.*, compared the content on Instagram and Flickr to identify discourse about Ebola and found that Instagram images

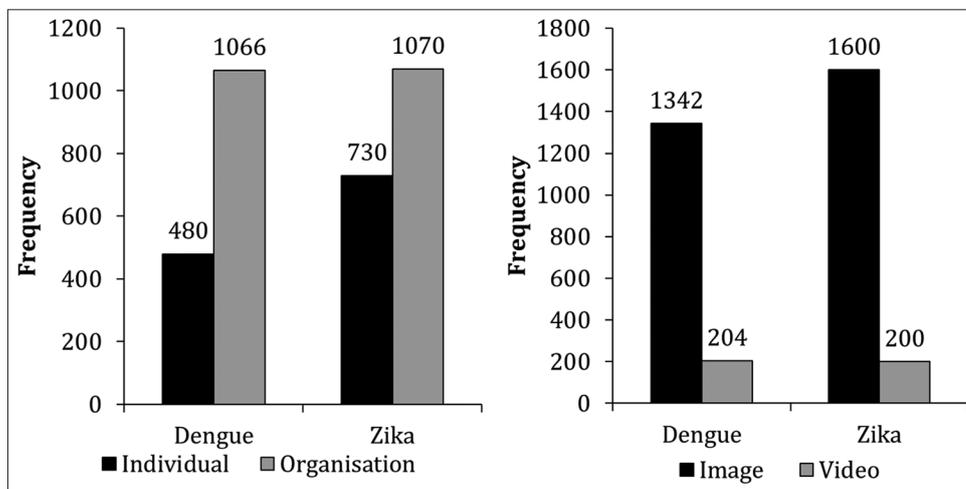


Figure 1: Type and source of post ($P < 0.001$)

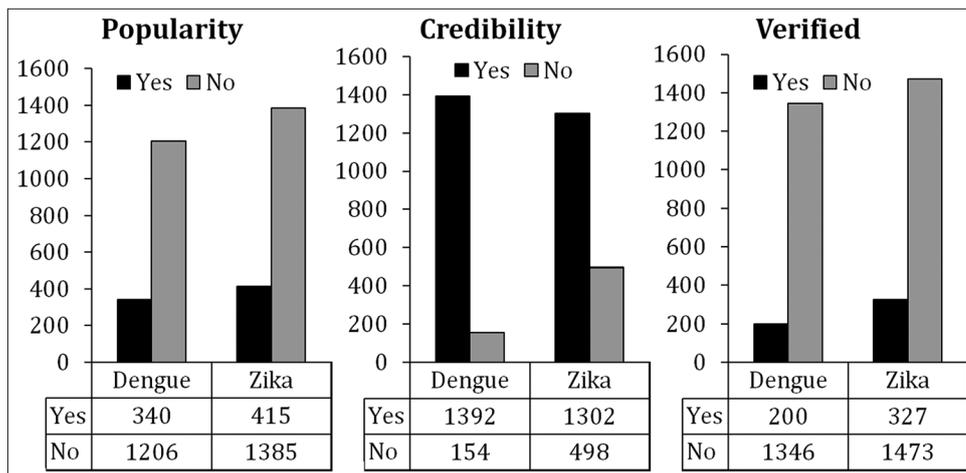


Figure 2: Popularity, credibility, and verification of post ($P < 0.001$)

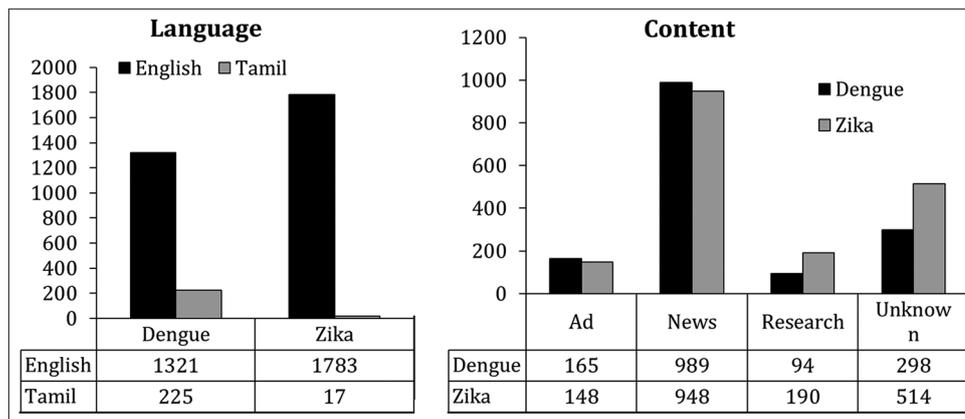


Figure 3: Language and content of the post ($P < 0.001$)

were mainly joke images. Flickr images primarily depicted healthcare workers and other professionals.^[9]

Tamil posts were more for the dengue than the Zika irrespective of the social media because dengue is a common epidemic in Tamil speaking area. Advertisement posts were more next to news posts, the reason behind which may be due to that people uses the social media for advertising their own posts for their own reasons, respectively. Posts displayed by the organization were having a higher percentage of credibility compared to the individual posts, which concludes that the posts posted by the organization were more reliable to the topic searched than the individual posts.

Twitter had more number of research and news posts, Instagram was having more number of advertisement posts. Research posts were more in Zika compare to Dengue which may be probably due to the curiosity behind the newer pandemic of Zika and increase in the incidence of the Zika virus infection in current times. People use Instagram for sharing their own posts by tagging with the topic trending^[5] at present, this was concluded by seeing that the Instagram posts were having more number of the irrelevant posts compared to the Facebook and Twitter. This can be overcome by authorizing the accounts, as verified posts are reliable and becoming popular.

LIMITATIONS

The study included only 300 recent posts in each category. Some of the posts have mixed languages such as English with the other languages such as Tamil, which will be categorized as English or Tamil during the data entry. Some of the interpretations were based on individuals, which may alter the results.

RECOMMENDATION

Social media should verify accounts to increase reliability. It can screen for false information to remove the false posts.

It should use adequate technology to disseminate the IEC materials pertained to the diseases effectively especially during emergencies.

CONCLUSION

In this study, out of 3346 posts collected, 2942 (87.9%) posts were images and others 404 (12.1%) were videos. 1210 (36.2%) posts were posted by the individuals, and 2136 (63.8%) were posted by organization. In our study, it is found that Facebook posts were more popular and verified. Twitter posts were credible and containing News and Research. Instagram posts were not relevant and less credible.

Social Media has almost replaced all another mode of communications in this decade. Hashtag campaign in social media is the recent trend of spreading the health information, especially where improvement in health literacy of a particular disease is targeted. It plays a key role in Information, Education, and Communication campaign of any disease. The effectiveness of these campaigns highly depends on characteristics of these posts such as reliability and type of social media. A channel to check reliability specific to post can be developed by social media platforms, and these posts can be promoted as a prime among the search results. False posts can be removed.

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