

Short Communication

Comparative analysis of trending tweets in Twitter during the year 2022 on days of public health significance

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Received: 16 June 2023

Revised: 01 September 2023

Accepted: 05 September 2023

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ABSTRACT

The use of social media in healthcare communication has expanded, public dissemination of health-related information is less common. Objective of the study was to compare the number of tweets received by public health campaigns with trending tweet and likes in twitter on those specific days. Recent posts with hashtags of nine general health and five dental public health related campaigns between 01 January 2022 to 31 December 2022 were selected from Twitter based on public health importance. We looked for top trending campaigns that had the most global reach. Descriptive statistical analysis was performed. Among the nine general health campaigns, no likes were received for five campaigns and three campaigns got likes which were greater than the trending campaigns. Among the oral health related tweets, only National tooth brushing day campaign garnered 76000 likes and none of the other oral health related tweet garnered likes. Future Twitter-based health campaigns should emphasize image-based information endorsed by a reputable organization. Further support for this message from well-known twitter users could expand the information's reach.

Keywords: Social media, Health promotion, Health campaigns, Dental health

INTRODUCTION

Social media has become an integral part of modern life.¹ Social media has interactive technologies that facilitate the creation and sharing of information, ideas, interests, and other forms of expression through virtual communities and networks.^{2,3} The most notable aspect of this is it influences society as a whole and holds a significant place in people's minds. These include social networking sites (SNS) like Facebook®, as well as micro-blogging platforms like Twitter®, Snapchat®, and Instagram®.⁴ In the past twelve years, social network platforms have virtually tripled the number of users they have—from 970 million in 2010 to 4.76 billion in January 2023 equating to 59.4% of the total global population. People use 36.2% of Twitter® for entertaining content, 37.9%, for following research brands and products, 61.2% for news and updates on current events, 22.4% for messaging friends and family, and 30.7% for a post or

sharing photos or videos.⁵ Initially, it was used to connect public figures such as celebrities, and higher officials with the general public, but new applications have emerged and social media has been widely used for health-related purposes, such as health interventions, health campaigns, medical education, and disease outbreak surveillance. Other uses of social media include the ability to offer opinions and reviews on anything we see, direct contact with target audiences, and increases popularity with ease.

An interactive social media network called Twitter® was created in 2006. Advertisers could reach 556.0 million Twitter® users in January 2023, ranking it 14th among the world's most active social media platforms. In Twitter®, males account for approximately 63% of the population, while females account for 37%. Twitter® is used by 8.9% of all people aged 13 and above worldwide.^{6,7} The total number of users that marketers can reach with advertisements on Twitter® increased by roughly 12

million (2.1%) in the three months leading up to January 2023. Currently, Twitter® is the most popular form of social media used for healthcare communication.⁸ Twitter® priorities shorter, more frequent posts. Because of the real-time nature of the material and the simplicity of accessing and reviewing publicly available information, Twitter® offers public health researchers a distinctive big data source.

A hashtag is a metadata tag that is prefaced by the hash symbol#. On social media, hashtags are used on micro-blogging and photo-sharing services as a form of user-generated tagging and collection of tweets about same condition that enables cross-referencing of content by topic or theme.⁹ Hashtags are a great way for employees and students in professional fields and education. Hashtags are used as a tool in social media to share content and gain maximum popularity. Nowadays, the health care sector is using hashtags to spread their agenda during health-related campaigns.¹⁰

Hence the aim of this analysis was to compare the number of tweets received by public health campaigns compared to trending tweet and likes in twitter on those specific days.

METHODS

This study was carried out between January to February 2023 to determine the extent to which the public reacts to health events. As this study does not involve subject materials, ethical clearance was not obtained. However, consent was obtained from relevant authorities to use the software program to analyze the number of tweets for the purpose of this study. In this study, public health related hashtags were compared to the general hashtags that received the maximum tweets on those specific days. Recent posts with hashtags of nine general health and five dental public health related campaigns, totally about fourteen were selected from Twitter based on public health importance (Table 1). The hashtags were examined by two investigators (DC and RS) using the awario tool (<https://awario.com>) and they were cross checked by the third and fourth author (MK and AS). Awario®, a social media monitoring tool owned by Search engine optimization (SEO) software, searched the internet in real-time for mentions of the chosen keywords. We ensured that our intended use was compliant with Awario® policy by applying and obtaining their consent to use their platform for educational purpose. The search was conducted globally, including tweets from all languages, and the search time was customized between 01 January 2022 to 31 December 2022. We ensured the collection of the records in such a way that the records for health-related campaign lies from 15 days before and after that particular campaign and the trending campaign record was taken on dates in respect to the days of public health significance. We excluded tweets that fell outside of our specified time frame. We made advantage of the tool's regular search, dashboard, and mention features. The data was retrieved

using downloadable PDF files, which contained the number of likes received.

Table 1: List of days of public health significance including the time period examined for recording the number of likes for the hashtag included in this comparative study.

Selected hashtags	Time duration	Category
No smoking (#nosmoking)	01-25 March 2022	General health
Tuberculosis day (#tuberculosis)	15 March-15 April 2022	General health
World health (#worldhealth)	25 March-20 April 2022	General health
No tobacco (#notobacco)	15 May-15 June 2022	General health
Blood donor (#blooddonor)	01-30 June 2022	General health
Tooth brushing (#toothbrushing)	(01-30 July 2022-world) and (01-30 November 2022-national)	Dental public health
Oral hygiene (#oralhygiene)	15 July-15 August 2022	Dental public health
Oral health (#oralhealth)	01-20 September 2022	Dental public health
Food day (#food)	01-30 October 2022	General health
Breast cancer (#breastcancer)	01-30 October 2022	General health
Diabetes (#diabetes)	01-30 November 2022	General health
Aids day (#aids)	30 November-30 December 2022	General health
Dentist day (#dentist)	01-30 December 2022	Dental public health

The top trending hashtags with the most likes were analyzed using the website <https://www.wincalendar.com>. We looked for top trending campaigns that had the most global reach. We manually entered the data collected from both Awario and Windows calendar into an excel spreadsheet. Descriptive statistical analysis was performed.

RESULTS

Table 2 represents the comparison of likes received to general health campaigns when compared to the trending campaigns. Among the nine general health campaigns, no likes were received for five campaigns and three campaigns got likes which were greater than the trending campaigns. #World blood donor day was one of the three general health campaigns which received 3400000 likes

which was greater than the trending campaigns on the same day. Table 3 compared the likes garnered for dental public health related campaigns versus trending campaigns on those days. Among the oral health related tweets, only

#National tooth brushing day campaign garnered 76000 likes compared to 218500 likes by the post of Daniel Radcliffe on that day. None of the other oral health related tweet garnered likes.

Table 2: Hashtags based on general health related likes compared to the most trending hashtags on those particular days.

S. no.	Date	General health days	Prevalent hashtags	Total no. of likes	
				General health days	Prevalent hashtags
1	24 March	#World TB day World Tuberculosis Day, also known as World TB Day, seeks to raise awareness for Tuberculosis. Tuberculosis is a bacterial infectious disease that affects the lungs.	#Ms dhoni – (image based post), MS Dhoni hugs Virat Kohli saying that the fans will never forget this chapter	0	367600
2	09 March	#No smoking day No smoking day is celebrated on second Wednesday on march which is intended to help smokers who want to quit smoking.	#David alaba (Image based post) David Alaba, football player has discussed his wild, unrestrained goal celebration by lifting a chair above his head	0	313600
3	07 April	#World health day (image based post), World Health Day aims to increase public awareness of a significant issue in global health that has been chosen by the World Health Organization	#Luka modraic (textual post) Benzema, a French professional footballer, second highest goal scorer, who plays as a striker got complimented by Modraic "What a player you are?"	260900	434000
4	31 May	#No tobacco day The goal of World No Tobacco Day is to increase public awareness & to promote sensible regulations that could lower tobacco usage globally	#BTS (image based post) BTS visits President Biden in the White House on this day to talk about prejudice and anti-Asian hate crimes	0	1100000
5	14 June	#World blood donor day (image based post) This date was chosen since it is the birthday of Nobel Prize-winning scientist Karl Landsteiner, who created the ABO blood group system. The necessity for blood and blood products is recognised globally on World Blood Donor Day	#Happy hoshi day (textual post), South Korean singer, dancer, and choreographer Kwon Soon-young, born on June 14, 1996, is better known by his stage name Hoshi. As a result, they celebrated Happy Hoshi Day	3400000	126200
6	01 October	#World breast cancer day (image based post) Breast Cancer Awareness Month is a global health initiative which aims to raise public awareness of the disease.	#Lula presidente (image based post), Lula has played a big part in the Brazil' transition from an autocracy to a democracy. But now he got stuck .So he got tweeted as #Future is yours, Brazil"	1800000	456300
7	16 October	#World food day The global event marks a day calling for worldwide awareness and collective action to combat the issue of hunger, and ensure healthy diets for all	#Dan rather (textual post) I am in my 90s, yes. I do seem to be trending on Twitter, yes. And I am still here, as of my most recent check. Enjoy your Sunday, everyone	0	212100
8	14 November	#Diabetes day The goal of World Diabetes Day is to increase public awareness of diabetes,	#Elect katie hobs (Image based post), American politician and social worker Kathleen Marie	0	153200

Continued.

S. no.	Date	General health days	Prevalent hashtags	Total no. of likes	
				General health days	Prevalent hashtags
		which raises blood sugar levels and raises the risk of heart disease, stroke, and mortality	Hobbs was chosen as Arizona's governor on 14 November 2022		
9	01 December	#World aids day (image based post), on this day, people from all around the world can unite in the fight against HIV, show solidarity for those who are infected, and pay tribute to those who have died from an AIDS-related illness	#I love hitler (textual post) Kanye West will be appearing on television to clarify the reasons why this brilliant person has been misunderstood. I adore Hitler, Kanye West	824100	256800

Table 3: Hashtags based on dental public health related likes compared to the most trending hashtags on those particular days.

S. no.	Date	Dental public health days	Prevalent events	Total no.of likes	
				Dental public health days	Prevalent events
1	15 July	#World tooth brushing day World Tooth brushing Day raises awareness of the negative effects of not brushing one's teeth	#Cheese steaks (image based post) No cheesesteaks in the world? Just crazy, that! — Mehmet Oz, M.D.	0	170000
2	01 August	#Oral hygiene day On 01 August, oral hygiene day is observed all over India in observance of the birth anniversary of Dr. G. B. Shankwalkar, the dean of periodontics in that country. Every year, events including camps, campaigns to raise rural oral health awareness	#Music (image based post), Becky, a singer and actress, claims that music is our common language	0	491500
3	12 September	#Oral health day On oral health day, we appeal to everyone to work together to lessen the burden of oral diseases. Its objective is to provide people with the information, resources, and confidence they need to maintain good oral health	#Emmy (Image based post), Zendaya is the youngest two-time winner of any Emmy in history and the first Black woman to win the award twice for lead actress in a drama series	0	226300
4	07 November	#National tooth brushing day (image based post), National Brush Day helps focus on children's oral health through facts about brushing, activities to make brushing fun, and tips to keep those teeth nice and healthy	#Daniel radcliffe (textual post), Tweets from Al Enkovic "Oh no, @danielradcliffe's Twitter account has been suspended! Wasn't it clear that he was parodying himself?"	76000	218500
5	24 December	#World dentist day World Dentist day, a day to celebrate the dentists all over the world and to honor their efforts to keep us smiling and healthy	#Christmas eve (image based post), President Biden puts up a tree for Christmas and says everyone "Just a few last adjustments! I hope you and your family are enjoying this Christmas Eve."	0	239600

DISCUSSION

This comparative analysis expressed the number of likes on health-related campaigns on Twitter between January

2022 to December 2022. This study looked at a large number of tweets on health campaigns that offered an alternative perspective to any of the earlier social media studies.

A study done by George et al showed that photos outperform links, videos, and text-based updates in terms of engagement. Social media has a lot of promise for reaching different demographics, but people are less reluctant to share or like postings on health-related events, which makes the posts less popular.¹⁰ Twitter has more information from organizational sources than other media; this makes people tend to search and share more information from agencies, professional groups, and health professionals in Twitter. Twitter provides a list of verified accounts and the profiles of these accounts are marked with a blue badge which might contribute to the authenticity of the users.¹⁰ We analyzed nine general health campaigns and five dental public health campaigns from January 2022 to December 2022. In order to determine whether a tweet received the most likes on these particular days of public health significance, we compared the likes with those of trending hashtags on the particular day. Reach of Public health campaign was 30% of the trending campaigns. Out of the fourteen public health related campaigns, five campaigns garnered likes which were image based. In line with the study conducted by George et al our study also demonstrated that most public health related campaigns were image based.¹⁰ Since the twitter users prefer liking or sharing image based information, it is advisable that public health campaign should include image based methods for dissemination of information. Among the campaigns included in this study, #World blood donor day, #World breast cancer day, #World aids day campaigns garnered more likes than the trending campaigns which substantiates the importance of image based messages. National tooth brushing day campaign was the only trending campaign for oral health awareness as it was promoted by a health related organization which ensured its members propagate the information. Hence future twitter based health campaigns should focus on image based information which is endorsed by a reputed organization and also its members should be involved in reaching out their contact list for dissemination of information. Additional endorsement of this message by popular twitter users could also increase the reach of the information and hence ensures the success of the campaigns.

A similar study on the patterns and characteristics of posts related to specific health issues (#dengue, #dengue virus, #zika, and #zika virus, ebola) on Facebook, Twitter and Instagram found that Facebook posts were more popular and had more posts from verified accounts.^{11,12} They also demonstrated that research-related posts were more prevalent on Twitter. Thackeray et al examined tweets on breast cancer awareness during Breast Cancer Awareness Month in 2012 and demonstrated that the majority of tweets did not promote any specific prevention behaviour.¹³

CONCLUSION

This study demonstrated that out of the fourteen health-related campaigns only three general health campaigns got

more likes than the other health campaigns. This research provides a novel perspective on the viability of how to use Twitter handling the dissemination of health-related information to the general public.

ACKNOWLEDGEMENTS

Authors would like to thank the Awario® team and Windows Calendar website for providing free access to their tool in analyzing the twitter® data.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Cayton H. The alienating language of health care. *J R Soc Med*. 2006;99;484.
2. Kietzmann JH, Hermkens K, McCarthy IP, Silvestre BS. Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*. 2011;54;3:241-51.
3. Obar JA, Wildman S. Social media definition and the governance challenge: An introduction to the special issue. *Telecommunications Policy*. 2015;39;9:745-50.
4. Chowdhry A, Kapoor P. Twitter for microblogging in oral health care, research and academics: Road map and future directions. *J Oral Maxillofac Pathol*. 2021;25:511-4.
5. Data Reportal. Digital Global Overview Report. Available at: <https://datareportal.com/reports/digital-global-overview-report>. Accessed on December 2022.
6. Bahabri RH, Zaidan AB. The impact of social media on dental practice promotion and professionalism amongst general dental practitioners and specialists in KSA. *J Taibah Univ Med Sci*. 2021;16(3):456-60.
7. Sinnenberg L, Buttenheim AM, Padrez K, Mancheno C, Ungar L, Merchant RM, et al. Twitter as a Tool for Health Research: A Systematic Review. *Am J Public Health*. 2017;107:143.
8. Raghupathi W, Raghupathi V. Big data analytics in healthcare: promise and potential. *Health Inf Sci Syst*. 2014;7;2:3.
9. Ching HC, Iyer H. Trends in Twitter – Hashtag Applications: Design Features for Value-Added Dimensions to Future Library Catalogues. *Library Trends*. 2012;61;1:248-58.
10. George N, Britto DR, Krishnan V, Dass LM, Prasant HA, Aravindhan V. Assessment of hashtag (#) campaigns aimed at health awareness in social media. *J Edu Health Promot*. 2018;7:114.
11. Fung IC, Blankenship EB, Goff ME, Mullican LA, Chan KC, Saroha N, et al. Zika virus related photo sharing on Pinterest and Instagram. *Disaster Med Public Health Prep*. 2017;11:656 9.
12. Seltzer EK, Jean NS, Kramer Golinkoff E, Asch DA, Merchant RM. The content of social media's shared

images about Ebola: A retrospective study. *Public Health*. 2015;129:1273-7.

13. Thackeray R, Burton SH, Giraud Carrier C, Rollins S, Draper CR. Using Twitter for breast cancer prevention: An analysis of breast cancer awareness month. *BMC Cancer*. 2013;13:508.

Cite this article as: Constance DD, Subbiah R, Madankumar PD, Sukumaran A. Comparative analysis of trending tweets in Twitter during the year 2022 on days of public health significance. *Int J Community Med Public Health* 2023;10:3839-44.