World leaders' usage of Twitter in response to the COVID-19 pandemic: a content analysis

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ABSTRACT

Background It is crucial that world leaders mount effective public health measures in response to COVID-19. Twitter may represent a powerful tool to help achieve this. Here, we explore the role of Twitter as used by Group of Seven (G7) world leaders in response to COVID-19.

Methods This was a qualitative study with content analysis. Inclusion criteria were as follows: viral tweets from G7 world leaders, attracting a minimum of 500 'likes'; keywords 'COVID-19' or 'coronavirus'; search dates 17 November 2019 to 17 March 2020. We performed content analysis to categorize tweets into appropriate themes and analyzed associated Twitter data.

Results Eight out of nine (88.9%) G7 world leaders had verified and active Twitter accounts, with a total following of 85.7 million users. Out of a total 203 viral tweets, 166 (82.8%) were classified as 'Informative', of which 48 (28.6%) had weblinks to government-based sources, while 19 (9.4%) were 'Morale-boosting' and 14 (6.9%) were 'Political'. Numbers of followers and viral tweets were not strictly related.

Conclusions Twitter may represent a powerful tool for world leaders to rapidly communicate public health information with citizens. We would urge general caution when using Twitter for health information, with a preference for tweets containing official government-based information sources.

Keywords communicable diseases, public health, social media, Twitter, COVID-19, World leaders

Introduction

The COVID-19 outbreak has been declared a pandemic by the World Health Organization, because of 'alarming levels' of spread, severity and inaction.[1] As of 25th March 2020, there are over 414 000 cases globally and over 18 400 deaths.[2] The causative novel human coronavirus, severe acute respiratory syndrome (SARS)-CoV-2, is primarily transmitted by respiratory droplet spread and direct contact; moreover, it can also survive in air.[3, 4] Transmission is also possible in asymptomatic carriers.[5] It is therefore crucial that world leaders mount effective public health measures to limit human-to-human transmission, including hand hygiene, social distancing and self-isolation.[1, 6, 7]

Twitter may represent a powerful public health tool for world leaders to rapidly and directly communicate information on COVID-19 to citizens, in addition to more conventional media such as television, radio and newspapers. Twitter is a free microblogging social media website with 152 million registered daily users.[8] Furthermore, over 500 million people visit Twitter per month without logging into an account.[9]

The Group of Seven (G7) is an international intergovernmental organization, which comprises the seven most advanced economies in the world according to the International Monetary Fund: Canada, France, Germany, Italy, Japan, the UK and the USA.[10] The European Union (EU) is also an invitee to the G7, represented by the Presidents of the EU Council and EU Commission. The language used by world leaders, such as the G7 heads of state, can influence the opinions and behaviour of citizens.[11] Furthermore, the nature of communication by political leaders affects public policy outcomes.[12] Thus, political leaders can use their influence over public opinion to address public health issues, ideally by disseminating evidence-based public health information.[13]

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A MEDLINE search for the keywords 'COVID-19' and 'Twitter' delivered no results. Thus, to our knowledge, this qualitative study is the first to evaluate the role of Twitter as used by G7 world leaders in response to COVID-19.[10, 14] Content analysis is performed exclusively for 'viral' tweets, meaning those which rapidly spread across a high number of users.[15]

Primary research objective: To explore how G7 world leaders are using Twitter in response to the COVID-19 pandemic.

Secondary research objectives:

- To determine what proportion of G7 world leaders use Twitter and assess their reach (followers);
- To perform content analysis for all G7 world leaders' viral tweets and classify into appropriate themes;
- To evaluate associated characteristics of these tweets, including weblinks to official government-based information sources and use of video; and
- To determine what proportion of these tweets are in non-English languages.

Methods

Verified Twitter accounts[16] were sought for the following G7 members:

- Justin Trudeau, Prime Minister of Canada;
- Emmanuel Macron, President of France;
- Angela Merkel, Chancellor of Germany;
- Giuseppe Conte, Prime Minister of Italy;
- Shinzo Abe, Prime Minister of Japan;
- Boris Johnson, Prime Minister of the UK;
- Donald Trump, President of the US;
- Charles Michel, President of the EU Council; and
- Ursula von der Leyen, President of the EU Commission.

The advanced Twitter search function was used to filter by the following inclusion criteria: keywords 'COVID-19' or 'coronavirus'; search dates 17th November 2019–17th March 2020 (inclusive); and viral tweets. There is no strict definition for what constitutes a 'viral' tweet—we stipulated a minimum of 500 'likes'. Primary tweets meeting these criteria, plus any secondary tweets as part of a viral thread, were included in our analysis. No language restrictions were stipulated; Twitter's built-in Google translate function was used for non-English tweets.[17] Exclusion criteria were as follows: non-verified Twitter accounts and non-viral tweets.

Data were analysed on 18th March 2020 from a UK IP address. The following outcome measures were recorded: name, number of followers, number of viral tweets, number of associated weblinks to official government-based information sources, top tweet characteristics, languages used and number of viral videos with views. Top tweet characteristics included 'likes', 'retweets' and 'comments'. A 'like' indicates that a registered Twitter user appreciates the tweet, while a 'retweet' indicates that they have shared the tweet on their own Twitter page and a 'comment' indicates that they have added written commentary for the tweet. All of these actions increase the reach of the viral tweet in question. Content analysis was performed by the lead author (SRR) to identify and categorize viral tweets into key themes.

This study has been reported as per the Standards for Reporting Qualitative Research.[18] No ethical approval was required as all data (tweets) were retrieved from the public domain.

Results

Verified Twitter accounts were identified for eight out of nine (88.9%) G7 members; no active account was identified for Angela Merkel, Chancellor of Germany. Results for all outcome measures are displayed in Table 1. The included G7 members had a total following of 85.7 million Twitter users, and 203 viral tweets on COVID-19. 56 (27.6%) viral tweets were in non-English languages, including French, German, Italian and Japanese. All non-English tweets were successfully translated into English using Twitter's built-in Google translate function.[17]

Content analysis revealed three key themes for viral tweets:

(i) Informative—seeking to share information or updates.
(ii) Morale-boosting—seeking to boost morale or galvanize.
(iii) Political—seeking to raise a point of political debate.

In any cases of overlap, the majority of the tweet content dictated its thematic classification. Out of 203 viral tweets, 166 (82.8%) were 'Informative', of which 48 (28.6%) had associated weblinks to official government resources, while 19 (9.4%) were 'Morale-boosting' and 14 (6.9%) were 'Political'. All 'Political' tweets were sent from the Twitter account of Donald Trump, President of the US. Additionally, 19 viral videos were embedded within Informative viral tweets, with a total of 12.4 million views. Figure 1 displays the number of followers and breakdown of viral tweet themes per G7 world leader for comparison. Table 2 displays examples of viral tweets per theme.

Discussion

Main finding of this study

To our knowledge, this is the first study of world leaders' Twitter usage in response to COVID-19. Our findings demonstrate that Twitter can be a powerful tool to rapidly

Table 1 Results from COVID-19 Twitter search

Name, G7 Member Nation[a]	Followers (million)	Viral tweets[b]	Theme: n (%)—Of which contained government weblinks: n (%)	Top tweet[c]: likes, retweets and comments (thousand)	Viral videos[d], n; total views (million)	Non-English language tweets: n (%)
Justin Trudeau	4.7	61	Informative: 61 (100.0)—27 (44.3)	61.8, 10.7, 4.0	N/A	French: 1 (1.6)
Emmanuel Macron	4.6	24	Informative: 15 (62.5)—2 (13.3) Morale-boosting: 9 (37.5)	134.1, 29.9, 4.2	3; 2.8	French: 22 (91.7)
Giuseppe Conte	0.4	8	Informative: 7 (87.5)—5 (71.4) Morale-boosting: 1 (12.5)	16.4, 2.8, 1.4	2; 0.2	Italian: 8 (100.0)
Shinzo Abe	1.7	20	Informative: 19 (95.0)—1 (5.2) Morale-boosting: 1 (5.0)	27.0, 66.7, 4.9	1; 0.9	Japanese: 20 (100.0)
Boris Johnson	1.6	16	Informative: 15 (93.8)—8 (53.3) Morale-boosting: 1 (6.3)	9.5, 1.7, 1.4	6; 3.1	N/A
Donald Trump	71.4	51	Informative: 32 (62.7)—3 (9.4) Morale-boosting: 5 (9.8) Political: 14 (27.5)	289.3, 81.3, 78.4	2; 4.1	N/A
Charles Michel	1.1	2	Informative: 2 (100.0)	0.5, 0.3, 0.1	N/A	N/A
Ursula von der Leyen	0.2	21	Informative: 19 (90.5)—2 (10.5) Morale-boosting: 2 (9.5)	20.0, 6.7, 2.9	5; 1.3	French: 1 (4.8); German: 1 (4.8); Italian: 2 (9.5)
Total	85.7	203	Informative: 168 (82.8)—48 (28.6) Morale-boosting: 19 (9.4) Political: 14 (6.9)	558.6, 200.1, 97.3	19; 12.4	French: 24 (11.8); German: 2 (1.0); Italian: 10 (4.9); Japanese: 20 (9.9)

[a]G7 Members' verified Twitter accounts ('handles') were as follows: @JustinTrudeau; @EmmanuelMacron; @GiuseppeConteIT; @AbeShinzo; @BorisJohnson; @realDonaldTrump; @eucopresident; @vonderleyen; and no active Twitter account was identified for Angela Merkel.

[b]Viral tweet defined as attracting at least 500 likes on the subject of 'COVID-19' or 'coronavirus'.

[c]Top tweet defined as that with the highest number of likes.

[d]All viral Twitter videos were embedded within viral informative tweets. All figures reported are accurate to 1 decimal place.

communicate with citizens during public health crises: to inform, to boost morale and even to politicize. The majority of viral tweets fell within the 'Informative' category. We are pleased to see dissemination of information from official government-based sources including the UK's National Health Service (NHS), the Centers for Disease Control and Prevention (CDC) and the individual G7 members' national departments of health. As this search was performed from a UK IP address, we were particularly reassured that a weblink to the NHS COVID-19 advice webpage appeared above all search results in this study, as well as the Twitter page for the Department of Health and Social Care.[19]

What is already known on this topic

The communication and language used by world leaders can influence the opinions and behaviour of the public.[11] World leaders can use their influence to address crises, especially by disseminating evidence-based information.[13] On the bicentennial of her birth, consider the example of Florence Nightingale's extraordinary use of publicity and statistics to promote public health, reform hospitals, inspire and educate.[20]

It is essential however to consider the impact of misinformation and propaganda during times of crisis and conflict. For example, the atrocious use of propaganda by

Table 2 Sample COVID-19 viral tweets according to theme

Name	Theme	Viral Tweet[a]	Date	Likes, retweets and shares (thousand)
Justin Trudeau	Informative	'For the latest updates on COVID-19, please follow @CPHO_Canada and @GovCanHealth. @PattyHajdu is also providing important information on Canada's response to the virus, and will continue to do so as the situation evolves. For more info, visit bit.ly/335BYdc'	11th March 2020	1.1, 0.5, 0.2
Giuseppe Conte	Informative	'We share this simple information. It's important.' (Associated infographic from Italian Ministry of Health; translated from Italian)	24th February 2020	2.7, 1.3, 0.7
Boris Johnson	Informative	'If you have symptoms of coronavirus, it's important that you stay at home for 7 days to help protect your friends and neighbours. More info: http://nhs.uk/coronavirus’'	13th March 2020	7.4, 2.8, 2.4
Donald Trump	Informative	'The @CDCgov has published guidelines on http://Corona Virus.gov to enable every American to respond to this epidemic and to protect themselves, their families and their communities.'	14th March 2020	57.7, 16.4, 7.9
Shinzo Abe	Informative	'If you are worried about your symptoms, such as symptoms such as coughing and fever, please consult your nearest center first. Therefore, if an infection is determined to be suspected, we have established a system that will surely connect to a medical institution that has a medical treatment system.' (Translated from Japanese)	14th February 2020	4.3, 1.2, 0.6
Urusla von der Leyen	Informative	Dear Italians, in this difficult moment, I want to tell you that you are not alone. Italy is part of Europe, and Europe suffers from Italy. In EU we are all Italians. The @EU_Commission will channel several billions of € to Italy to help SMEs, healthcare sector & the people #COVID19 (Associated government-based video; translated from Italian)	11th March 2020	20.0, 6.7, 2.9
Emmanuel Macron	Morale-boosting	'We are in a health war against COVID-19' (translated from French)	16th March 2020	134.1, 29.9, 4.2
Boris Johnson	Morale-boosting	'Coronavirus may very well be a challenge in the weeks and months ahead. But I have no doubt that with the help of the NHS and its incomparable staff, this country will get through it—and beat it.'	1st March 2020	9.5, 1.7, 1.4
Donald Trump	Political	'Someone needs to tell the Democrats in Congress that CoronaVirus does not care what party you are in. We need to protect ALL Americans!'	11th March 2020	165.8, 35.6, 21.8
Donald Trump	Political	'So, the Coronavirus, which started in China and spread to various countries throughout the world, but very slowly in the U.S. because President Trump closed our border, and ended flights, VERY EARLY, is now being blamed, by the Do Nothing Democrats, to be the fault of "Trump".'	28th February 2020	159.0, 34.8, 32.4

All figures reported are accurate to 1 decimal place.

[a]Viral tweet defined as attracting at least 500 likes on the subject of 'COVID-19' or 'coronavirus'.
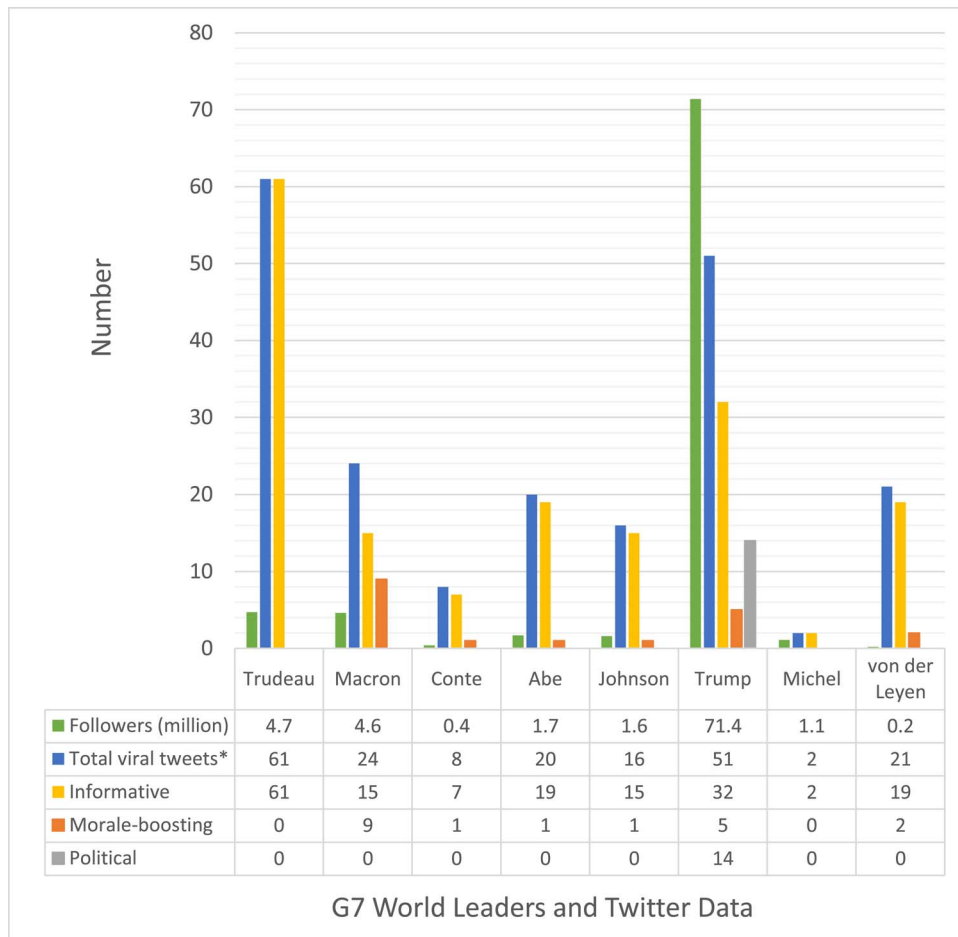
	Trudeau	Macron	Conte	Abe	Johnson	Trump	Michel	von der Leyen
■ Followers (million)	4.7	4.6	0.4	1.7	1.6	71.4	1.1	0.2
■ Total viral tweets*	61	24	8	20	16	51	2	21
■ Informative	61	15	7	19	15	32	2	19
■ Morale-boosting	0	9	1	1	1	5	0	2
■ Political	0	0	0	0	0	14	0	0

G7 World Leaders and Twitter Data

Fig. 1 G7 World leaders' individual twitter data. Breakdown of followers and viral tweet characteristics per G7 world leader. *Viral tweet defined as attracting at least 500 likes on the subject of 'COVID-19' or 'coronavirus'. Key: G7 = Group of Seven.

the Nazis led to the demonization and mass murder of Jewish people.[21] Misinformation may also negatively impact views of the public on health matters. A recent content analysis of data from *The Washington Post* revealed a plurality of misleading statements made by the US President Donald Trump on the subject of healthcare, particularly relating to the Affordable Care Act.[22] However, one would hope that in instances where official government-based sources are referenced or signposted, the risk of misinformation should be reduced.

Although no studies of Twitter during COVID-19 were revealed by our MEDLINE search, several previous studies have suggested a role for Twitter data during other public health outbreaks including Middle East respiratory syndrome,[23] SARS,[24] Ebola virus disease,[15] Zika virus,[25] H1N1 ('swine flu')[26] and H7N9 ('avian flu').[27] Suggested roles for Twitter include infectious disease surveillance, predicting spread of disease, dissemination of public health information

and assessing public views toward public health outbreaks.[15,23–27]

What this study adds

To our knowledge, this study is the first to analyze the usage of Twitter by G7 world leaders in response to COVID-19. Our search strategy replicates a typical search by a member of the public seeking tweets from on the subject of COVID-19, using the keywords 'COVID-19' and 'coronavirus'. This study has determined that the majority of tweets fell within the 'Informative' category. We feel that these 'Informative' tweets, followed by 'Morale-boosting' tweets, are generally more helpful than 'Political' tweets from a public health perspective. Our study has also determined the proportion of non-English tweets by G7 world leaders and highlighted that this language barrier was easily overcome through Twitter's in-built Google translate function.[17] We have evaluated the characteristics of viral tweets, including the use of government

weblinks and viral videos to share information. Conducting this study highlighted the user-friendly nature of Twitter in searching information on COVID-19, due to concise content (limited to 280 characters per tweet) and the ability to quickly translate non-English tweets where necessary.

Our study found that the G7 leaders have a large following on Twitter—a combined total of 85.7 million followers. A disproportionately high number of followers were attributed to the Twitter account of US President Donald Trump. This may in part be due to his previous celebrity status through reality television and popular culture. Indeed, musician Justin Bieber has 111 million followers as of 26th March 2020— considerably more than the G7 leaders combined. However, our study demonstrated that the number of followers does not necessarily translate into more viral tweets—indeed, highest number of COVID-19 viral tweets were sent from the account of Justin Trudeau, President of Canada. This is because it is not necessary to follow a Twitter account in order to view, like, retweet or comment on a tweet sent from said account. Furthermore, the 19 viral videos embedded within 'Informative' tweets attracted a total of 12.4 million views, indicating that the number of 'likes' alone underestimates the true reach of viral tweets.

Interestingly, this study highlighted that Angela Merkel, Chancellor of Germany, is the only G7 world leader who does not appear to have a verified and active Twitter account. Thus, the use of Twitter is not crucial for world leaders due to alternative forms of communication including television, radio, newspapers and indirect inclusion in social media by other users.

Our methodology could also be applied to a range of other Twitter user groups in response to COVID-19 or other health issues. These might include other politicians, celebrities, organisations, charities and other entities. Interestingly, Twitter is censored in the People's Republic of China, so this study's methodology cannot be applied.[28]

Limitations of this study

This study has a number of limitations. First, this study likely underestimates the true reach of Twitter as these G7 members' tweets could have been viewed without 'liking' them or even needing an account. Furthermore, in-depth analysis of the reach of these tweets is beyond the remit of this study. We also acknowledge that the resulting themes were decided by the first author, albeit he is trained in thematic analysis. Others might apply different terms to certain content. Our study only included tweets with the keywords 'COVID-19' or 'coronavirus' to maintain a focused search. It is however possible that some relevant tweets were missed if they did not

specifically include these words. Our study only included G7 members, on the basis that they represent prominent world leaders across several nations. Further research could evaluate the usage of Twitter by other politicians from different countries. Finally, the threshold of 500 likes to qualify as a viral tweet was an arbitrary one determined *a priori* in the absence of a strict definition from the literature, albeit it resulted in a good range of data across all included G7 member nations.

Conclusion

This study has demonstrated the widespread use of Twitter by the majority of G7 world leaders with many viral tweets on the subject of COVID-19. The majority of viral tweets were 'Informative', and many had weblinks to official government-based sources. Twitter may represent a powerful tool for world leaders to rapidly communicate with citizens during public health crises. We would urge general caution when using Twitter as a public health information source and give preference to tweets containing official government-based health information and advice.

Conflicts of interest

No conflicting relationship exists for any author.

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