



Similar Events but Contrasting Impact: Appraising the Global Digital Reach of World Heart Day and Atrial Fibrillation Awareness Month

RESEARCH LETTER

KASHISH MALHOTRA**

VANDITA LAL**

MONIL MAJMUNDAR

ASHISH KUMAR

GURPREET SINGH WANDER

ANKUR KALRA

*Author affiliations can be found in the back matter of this article

**Joint first authors

ubiquity press

ABSTRACT

Background: With over 18.6 million deaths annually, cardiovascular diseases (CVDs) are the leading cause of mortality worldwide. One such complication of CVDs that can result in stroke is atrial fibrillation (Afib). As part of global outreach and awareness, World Heart Day and Atrial Fibrillation Awareness Month are celebrated annually on 29 September and the month of September, respectively. Both of these events are important cardiovascular awareness initiatives to assist public education and develop awareness strategies, and they have received considerable support from leading international organizations.

Objective: We studied the global digital impact of these campaigns via Google Trends and Twitter.

Methods: We evaluated the overall number of tweets, impressions, popularity and top keywords/hashtags, and interest by region to determine the digital impact using various analytical tools. Hashtag network analysis was done using ForceAtlas2 model. Beyond social media, Google Trends web search analysis was carried out for both awareness campaigns to examine 'interest by region' over the past five years by analyzing relative search volume.

Results: #WorldHeartDay and #UseHeart (dedicated social media hashtags for World Heart Day by the World Heart Federation) alone amassed over 1.005 billion and 41.89 million impressions as compared with the 1.62 million and 4.42 million impressions of #AfibMonth and #AfibAwarenessMonth, respectively. On Google Trends web search analysis, the impact of Afib awareness month was limited to the USA, but World Heart Day had a comparatively global reach with limited digital involvement in the African continent.

Conclusions: World Heart Day and Afib awareness month present a compelling case study of vast digital impact and the effectiveness of targeted campaigning using specific themes and keywords. Though the efforts of the backing organizations are commended, planning and collaboration are needed to further widen the reach of Afib awareness month.

CORRESPONDING AUTHOR:

Ankur Kalra, MD, FACP, FACC, FSCAI

Cardiovascular Institute, Kalra Hospitals, Tulsi Dass Kalra Marg, New Delhi, India

akalra@alumni.harvard.edu

KEYWORDS:

World Heart Day; Atrial Fibrillation Awareness Month; healthcare awareness events; awareness campaign; social media

TO CITE THIS ARTICLE:

Malhotra K, Lal V, Majmundar M, Kumar A, Wander GS, Kalra A. Similar Events but Contrasting Impact: Appraising the Global Digital Reach of World Heart Day and Atrial Fibrillation Awareness Month. *Global Heart*. 2023; 18(1): 30. DOI: <https://doi.org/10.5334/gh.1212>

With over 18.6 million deaths annually, cardiovascular diseases (CVDs) are the leading cause of mortality worldwide [1]. One such complication of CVDs that can result in stroke is atrial fibrillation (Afib), which is expected to affect more than 12.1 million individuals in the US alone by 2030 and increases morbidity and mortality [2]. In order to achieve the UN's goal of decreasing global mortality from non-communicable diseases (NCDs) by 25% by 2025, it is crucial to raise knowledge about the prevention and management of various CVDs as well as to support research to improve outcomes. As part of global outreach and awareness, World Heart Day and Atrial Fibrillation Awareness Month are celebrated annually on 29 September and the month of September, respectively. Both of these events are important cardiovascular awareness initiatives to assist public education and develop awareness strategies, and they have received considerable support from leading international organizations and the US government, among others. We studied the global digital impact of these campaigns via Google Trends and Twitter without any language or geographical restrictions.

We evaluated the overall number of tweets, impressions, popularity and top keywords/hashtags, and interest by region to determine the digital impact of a healthcare awareness event that has previously been used in comparable research [3–5]. Using Sprout Social, we extracted the total number of tweets published in September from 2014 through 2022 for several search queries pertaining to World Heart Day and Afib Awareness Month [6]. Total impressions, which essentially represent the total number of Twitter users a tweet may have reached, were computed using Symplur's machine learning algorithm [7]. Using SocioViz, real-time analysis of the most popular and recent tweets was done to determine the top connected hashtags and keywords in order to better comprehend the context of the Twitter posts on 30 September [8]. Each hashtag in a hashtag network analysis was represented as a node and connected to other hashtags if they appeared in the same tweet. Different groups of arguments that frequently concur were represented by different colors using ForceAtlas2 model to spatialize the network. Beyond social media, Google Trends web search analysis was carried out for both awareness campaigns to examine 'interest by region' over the past five years by analyzing relative search volume.

The results of the study noted that the #WorldHeartDay and #UseHeart (dedicated social media hashtags for World Heart Day by the World Heart Federation) alone amassed over 1.005 billion and 41.89 million impressions compared with the 1.62 million and 4.42 million impressions of #AfibMonth and #AfibAwarenessMonth, respectively. Seven of the top 10 influencers of #WorldHeartDay with the highest impressions were news media outlets followed by WHO and other international organizations. Five of the top 10 influencers of #AfibAwarenessMonth were individual accounts followed by cardiology organizations and pharmaceutical company accounts.

Similarly, over 150,000 tweets (25% year-on-year increase) were posted about World Heart Day compared with the 980 tweets (41% year-on-year decrease) specific to Afib Awareness Month in 2022 as shown in Table 1. On network analysis (Figure 1), the top five keywords associated with Afib Awareness Month were 'heart,' 'rhythm,' 'patient,' 'amiodarone,' and 'stroke.' The top five associated hashtags with Afib Awareness Month were '#cardiotwitter,' '#medtwitter,' '#cardiology,' '#epeeps,' and '#meded.' On Google Trends web search analysis, the impact of Afib Awareness Month was limited to the USA, but World Heart Day had a comparatively global reach with limited digital involvement in the African continent as shown in Supplementary Figure 1.

World Heart Day and Afib Awareness Month present a compelling case study of vast digital impact and the effectiveness of targeted campaigning using specific themes and keywords. One may intuitively think that an 'awareness month' may have more impact compared with an 'awareness day,' simply because it is a month-long event with more cumulative reach than a single-day campaign. However, we reported otherwise in the present study. Though the efforts of the sponsoring organizations are commended, planning and collaboration are needed to further widen the reach of Afib Awareness Month. This directs the conversation to scientifically evaluate the impact of these campaigns and gives all the concerned stakeholders a roadmap to plan ahead. Participation of underrepresented African populations and promoting diversity and inclusion are needed, as has also been noted in earlier work analyzing other awareness months [9, 10]. It further reflects that along with getting recognition from governmental bodies or

	ATRIAL FIBRILLATION TWEETS (SEARCH QUERY 1)	TWEETS SPECIFIC TO AFIB AWARENESS MONTH (SEARCH QUERY 2)	TWEETS SPECIFIC TO WORLD HEART DAY DEDICATED KEYWORD – #USEHEART OR USE HEART (SEARCH QUERY 3)	TWEETS SPECIFIC TO WORLD HEART DAY (SEARCH QUERY 4)
2014	7,475	549	3,148	31,996
2015	6,996	613	2,599	56,927
2016	10,332	837	7,466	86,820
2017	11,503	2,348	3,361	61,169
2018	21,906	2,112	5,176	1,20,707
2019	14,150	2,082	6,772	69,790
2020	13,456	1,791	23,578	1,48,823
2021	15,759	1,660	14,900	1,24,668
2022	12,905	980	16,287	1,55,797

Table 1 Total number of tweets. For search queries 1 and 2, the time frame was the whole month of September (1–30 September). The time frame for search queries 3 and 4 was 28–30 September. Search query 1- ‘afib OR #afib OR atrial fibrillation OR #atrialfibrillation.’ Search query 2- ‘#afibawareness-month OR #afibawareness OR afib awareness OR afib awareness month OR atrial fibrillation awareness OR atrial fibrillation awareness month OR #atrialfibrillationawareness OR #atrialfibrillationawarenessmonth.’ Search query 3- ‘use heart OR #useheart.’ Search query 4- ‘world heart day OR heart day OR #whd OR whd OR #worldheartday OR #heartday.’

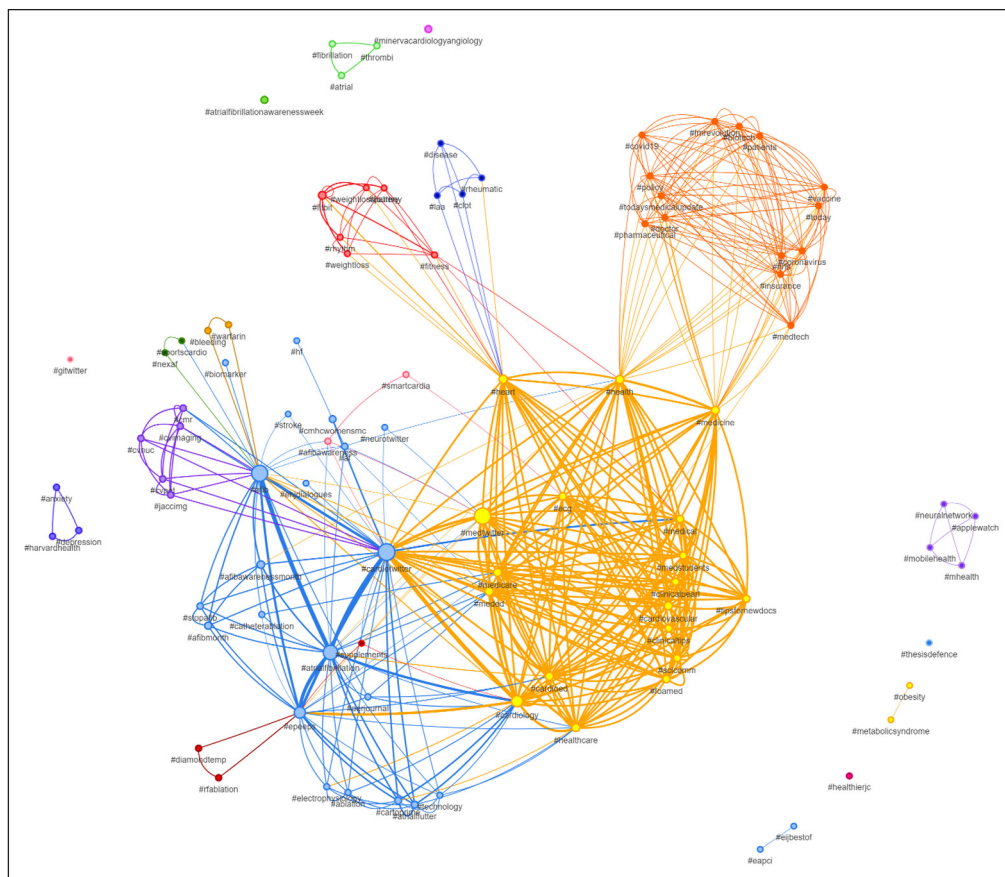


Figure 1 Hashtag network analysis of the search query- ‘afib OR #afib OR atrial fibrillation OR #atrialfibrillation.’

medical societies, social media has the potential to host a successful advocacy campaign with unparalleled reach to form pragmatic communities. Importantly, a blueprint for synergistic cross-platform digital promotion of similar awareness campaigns may be considered. However, in a myriad of awareness campaigns, there seems insufficient evidence to demonstrate the real-life positive impact brought by some of these campaigns. Nonetheless, these events pack the potential to propagate a positive social environment to steer policy development.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Supplementary figure 1.** Global Google web search interest of World Heart Day and Afib Awareness Month over the past five years. DOI: <https://doi.org/10.5334/gh.1212.s1>

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS

Kashish Malhotra and Vandita Lal are joint first authors.

AUTHOR AFFILIATIONS

Kashish Malhotra  orcid.org/0000-0002-6985-5731

Department of Medicine, Dayanand Medical College and Hospital, Punjab, India

Vandita Lal  orcid.org/0009-0001-9205-1731

Department of Medicine, Dayanand Medical College and Hospital, Punjab, India

Monil Majmundar  orcid.org/0000-0002-5389-5878

Department of Cardiology, University of Kansas Medical Center, Kansas City, KS, USA

Ashish Kumar  orcid.org/0000-0003-4249-0055

Department of Internal Medicine, Cleveland Clinic Akron General, Ohio, USA

Gurpreet Singh Wander  orcid.org/0000-0002-4596-4247

Department of Cardiology, Dayanand Medical College and Hospital, Punjab, India

Ankur Kalra  orcid.org/0000-0003-0080-1660

Department of Cardiology, Kalra Hospitals, New Delhi, India

REFERENCES

1. **World Heart Federation.** About – World Heart Day. Accessed October 6, 2022. <https://world-heart-federation.org/world-heart-day/about-whd/>.
2. **American College of Cardiology.** AFib Awareness Month 2021 – American College of Cardiology. Accessed October 6, 2022. <https://www.acc.org/Membership/Sections-and-Councils/Cardiovascular-Team-Section/Section-Updates/2021/09/16/12/43/AFib-Awareness-Month-2021>.
3. **Goyal K, Nafri A, Marwah M,** et al. Evaluating the global impact of stroke awareness month: a serial cross-sectional analysis. *Cureus.* 2022; 14(9). DOI: <https://doi.org/10.7759/cureus.28997>
4. **Malhotra K, Kalra A, Kumar A, Majmundar M, Wander GS, Bawa A.** Understanding the digital impact of world hypertension day: key takeaways. *Eur Hear J – Digit Heal.* Published online August 10, 2022. DOI: <https://doi.org/10.1093/ehjdh/ztac039>
5. **Malhotra K, Bawa A, Goyal K, Wander GS.** Global impact of deep vein thrombosis awareness month: challenges and future recommendations. *Eur Heart J.* Published online May 16, 2022. DOI: <https://doi.org/10.1093/eurheartj/ehac252>
6. **Sprout Social.** About Us | Sprout Social. Accessed October 13, 2022. <https://sproutsocial.com/about/>.
7. **Symplur.** Symplur: Healthcare Analytics Products for Social and Real-World Data. Accessed October 13, 2022. <https://www.symplur.com/>.
8. **SocioViz.** SocioViz is a free Social Network Analysis tool for Twitter. Do you need a social media analytics software for Social Media Marketing, Digital Journalism or Social Research? Have a try and jump on board! Accessed October 13, 2022. <https://socioviz.net/home>.
9. **Malhotra K, Bawa A.** Prioritizing and promoting Hernia Awareness Month: a call for action. *World J Surg* 2022. Published online April 10, 2022: 1–2. DOI: <https://doi.org/10.1007/s00268-022-06553-6>
10. **Malhotra K, Synn CPC, Davitadze M,** et al. Global impact of PCOS awareness month: challenges and opportunities. *Endocr Abstr.* 2022; 81. DOI: <https://doi.org/10.1530/endoabs.81.P449>

TO CITE THIS ARTICLE:

Malhotra K, Lal V, Majmundar M, Kumar A, Wander GS, Kalra A. Similar Events but Contrasting Impact: Appraising the Global Digital Reach of World Heart Day and Atrial Fibrillation Awareness Month. *Global Heart.* 2023; 18(1): 30. DOI: <https://doi.org/10.5334/gh.1212>

Submitted: 13 November 2022

Accepted: 22 May 2023

Published: 13 June 2023

COPYRIGHT:

© 2023 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>.

Global Heart is a peer-reviewed open access journal published by Ubiquity Press.