

GUEST EDITOR'S PAGE

Impact of Social Media and Multimedia Platforms



View From the JACC: Case Reports SoMe Editors

Estefania Oliveros, MD, MS,^a Yevgeniy Brailovsky, DO, MS,^b Alessandro Beneduce, MD,^c Hooman Bakhshi, MD,^d Edoardo Zancanaro, MD,^e Indah Sukmawati, MD,^f Mrinali Shetty, MD,^g Gina Lundberg, MD^h

Medical education has entered the digital transformation era. The process of transitioning from paper journals to digital contents is ongoing. Scientific and professional societies are adapting to this revolution by implementing interactive websites, webinars, and podcasts and entering the world of social media (SoMe) to provide their users with a multimedia learning experience.

ROLE OF SOCIAL MEDIA FOR SCIENTIFIC PUBLICATIONS

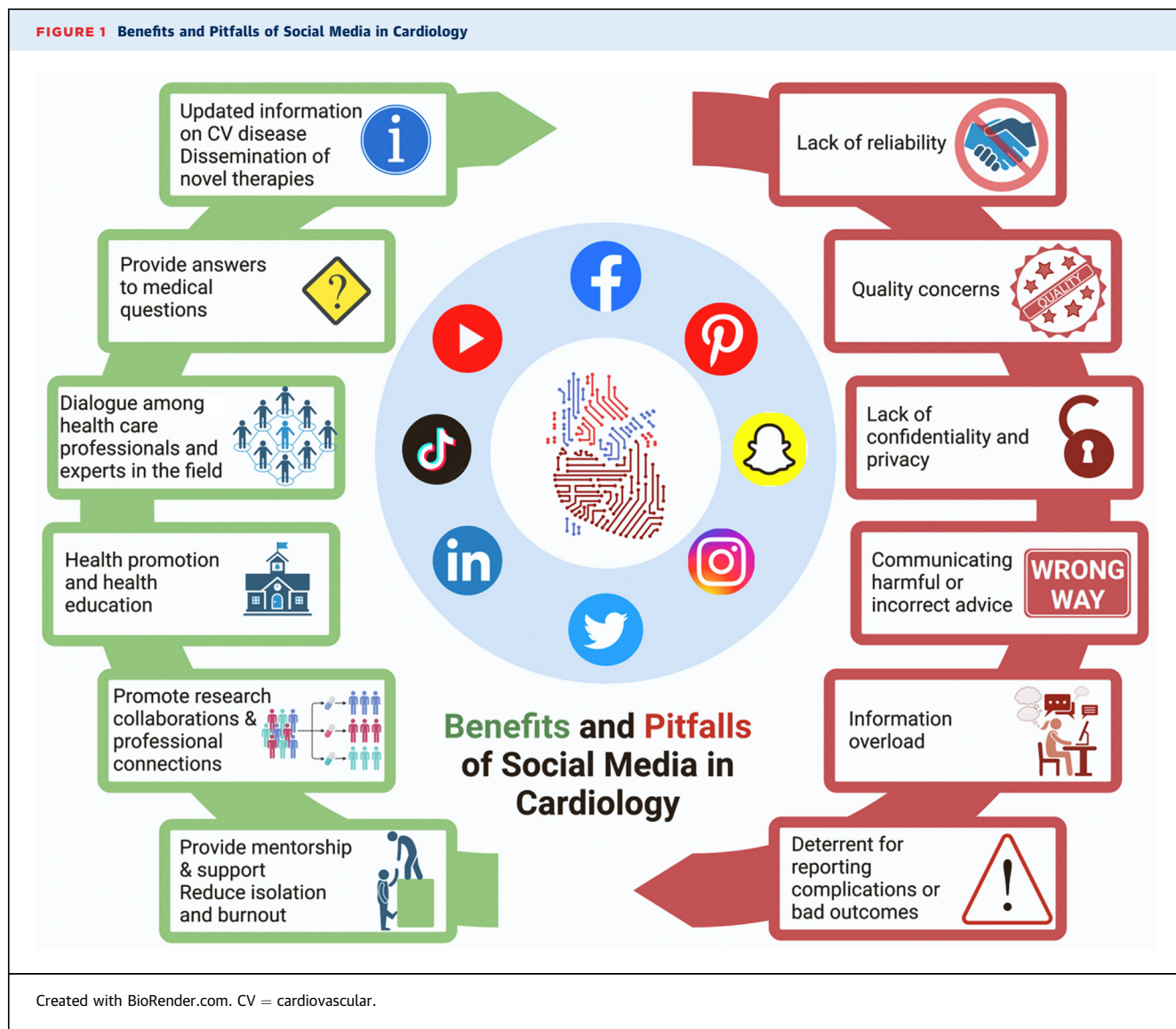
SoMe is the hotly debated online interactive communication platform that some cardiologists value and promote whereas others perceive as a time-consuming distraction with no scientific, clinical, or research value. Scientific and professional society journals began to use SoMe to promote publications in the last decade, with the *Journal of the American College of Cardiology (JACC)* starting on Twitter in April of 2015. *Circulation*, the journal

of the American Heart Association, started on Twitter in February of 2012, and the journals of the European Society of Cardiology joined Twitter in September 2017. Interestingly, although each of these medical societies opened Twitter accounts years before, as early as 2009, the process of recognizing the power of SoMe took some time. SoMe attention to publications has led to increased scientific impact and citations.¹ This change was promptly received by the editors, who added SoMe to their marketing strategies and metrics to increase publication readership and citations. Nowadays, nearly all high-impact journals use multiple SoMe platforms (eg, Facebook, Instagram, LinkedIn) (**Figure 1**), and SoMe editors comprise an integral part of the editorial staff. *JACC: Case Reports* has found SoMe to be an important tool for sharing case reports which allows for online interaction between the authors and the readers.²

DEFINITION OF SUCCESS THROUGH ALTMETRICS

Once an article is published, the power of its online distribution and dissemination can be monitored through alternative metrics, also known as altmetrics. The nontraditional metrics distinguish from the traditional citation counts, impact factor, and author H-index. They are represented in a multi-colored doughnut. These measures consider the online behavior of SoMe users and interactions with network content. Altmetrics comprise a broad group of metrics, including mentions on Facebook, Twitter, Instagram, LinkedIn, Wikipedia, F1000Prime, Pinterest, Reddit, YouTube, policy documents, exported citations through systems such as Mendeley, downloads, and comments in

From the ^aDivision of Cardiovascular Disease, Department of Medicine, Temple University Hospital, Philadelphia, Pennsylvania, USA; ^bDivision of Cardiology, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA; ^cHeart Valve Center, San Raffaele Hospital, Milan, Italy; ^dDivision of Cardiology, Department of Medicine, Johns Hopkins University, Baltimore, Maryland, USA; ^eDepartment of Cardiac Surgery, San Raffaele Hospital, Milan, Italy; ^fDepartment of Cardiovascular Medicine, Siloam Hospitals Lippo Village -Pelita Harapan University, Tangerang, Indonesia; ^gDepartment of Medicine, Columbia University, New York, New York, USA; and the ^hDivision of Cardiology, Department of Medicine, Emory University School of Medicine, Atlanta, Georgia, USA. The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

FIGURE 1 Benefits and Pitfalls of Social Media in Cardiology

blogs or other online publications. Some editors try to maximize the impact of the articles published by finding ways to share the link to the publication online. Altmetrics are viewed as a measure of social attention toward scientific contributions. There has been an evolution in perception of the impact of SoMe interaction and impact factors. Nearly 9 years ago, Fox et al³ found there was no correlation between Facebook and Twitter feeds and impact metrics in a randomized trial. However, more recent evidence has suggested that altmetrics can determine the future of citations in the cardiovascular community.⁴

Since 2019, the 3 *JACC: Case Reports* publications with the highest altmetrics have been:

1. Editorial: "Electrocardiographic Diagnosis of Life-Threatening STEMI Equivalents"⁵
2. Educational Corner: "Confirmation of Aortic Stenosis Severity in Case of Discordance Between Aortic Valve Area and Gradient"⁶
3. Imaging Vignette: "Transseptal Access Through an Atrial Septal Defect Closure Device Resulting in Open Heart Surgery"⁷

Scholarly research has moved beyond the printed format, and the *JACC* family is also moving away from

printed journals. Hence there is growing attention to the impact of SoMe to provide education to improve patient care.

PITFALLS OF SOCIAL MEDIA IN MEDICAL EDUCATION

SoMe allows knowledge and ideas to be shared at an unprecedented rate and scale, thus making it possible rapidly to spread the results of scientific research, gain access to experts' tips and tricks for interventional subspecialties, and directly interact with colleagues or key opinion leaders all over the globe. Although SoMe has a variety of positive impacts on medical society, the main pitfall is a lack of quality and reliability.⁸ A lack of peer review and quality filtering may lead to research misinterpretation and to the spread of pseudoscience. The danger of this, despite the great potential of SoMe, is that false information may spread quickly and become difficult to retract.

FUTURE OF SOCIAL MEDIA AND CARDIOLOGY PUBLICATIONS

Newer sites such as TikTok are becoming more popular, whereas other older platforms are waning in popularity. Time proves that innovation always wins over outdated methods. Printed publications are costly, slow to reach readers with today's immediate news cycle expectation, and lacking an interactive component. However, there are growing concerns that politics and financial interests are having a negative impact on SoMe conversations, followers, and agendas. The recent purchase of Twitter by Elon Musk has led to many concerns about the open structures and freedoms that were initially found on SoMe. And yet, we are confident that SoMe has become firmly integrated into medical education; scientific and clinical research; and scientific journal publication's global dissemination, immediate and long-term impact, and growing citation numbers.

THE VALUE OF VISUALS: CENTRAL ILLUSTRATION

As far back as when science writers started to describe the inner workings of the human body, there was always a desire to include an illustration. There is both a challenge in creating a great illustration and something magical about being able to convey a complicated concept in a single diagram. *JACC* journals have embraced the idea of the central illustration (CI) over the last almost 10 years and have begun publishing a CI with every original paper.⁹ The CI is meant to

convey the key findings of the case and highlight the overarching concept that the authors are trying to highlight by publishing a particular case presentation. In *JACC: Case Reports*, all authors are encouraged to include a CI with their manuscript. Because most scientific writers do not often possess artistic skills, the idea of creating a visually appealing scientific illustration can be overwhelming. Some authors rely on simple components in PowerPoint, and others use the services and expanded images from online platforms such as Canva, Mind the Graph, and BioRender, among others. *JACC: Case Reports* also recognizes that some authors would benefit from additional artistic help. As such, the editors pick a case to highlight novel concepts and a unique presentation. The case is reviewed by the CI editor, who drafts the CI and then works directly with professional illustrators and authors to create a unique CI to highlight the key concepts of the case. Some guiding principles to help the authors create an effective CI are to keep it simple, avoid too much text, and create a dynamic flow that guides the reader through the case presentation.

INTERACTIVE ILLUSTRATION: A NEW INITIATIVE OF JACC JOURNALS

A new initiative is to create a more interactive version of the CI. It would be available online, where the reader would be able to hover over different portions of the illustration to bring out additional images, videos, and audio commentary from the authors. This new initiative is meant to serve as both a teaser for the case and a video and audio guide that the authors can virtually offer to every reader.

WEBINARS

Webinars and online conferences are valuable educational methods that are becoming more popular, especially after travel restrictions resulting from the COVID-19 pandemic. Webinars allow earning of continuing medical education (CME) credits for medical professionals. The platform also allow participants to join the webinars from anywhere with an internet connection and to watch the recording if they miss the live webinar. In addition to the educational aspects, webinars are great platforms for networking with experts in the fields. However, personal interactions are much more limited compared with in-person conferences. In contrast to in-person conferences, there are limited opportunities for workshops and hands-on experiences. Finally, it is crucial for the leading medical societies to consider quality controls for webinars to make sure that

medical professionals have access to the most up-to-date science through reliable sources.

PODCASTS

Podcasts are online-accessible digital audio contents, typically available as series, providing succinct summaries of journal articles, complex topics, or debates, that can be streamed or downloaded to any personal media devices, such as computers or smartphones. Since its development in early 2000, the podcast has emerged as an audio media revolution providing its subscribers complete control over the program they are listening to.¹⁰ Podcasts represent an emerging phenomenon in medicine. Podcasts are constantly growing in popularity by being broadcasted through websites and SoMe platforms to disseminate medical knowledge by universities, hospitals, and scientific journals. For instance, since its launch in 2014, the JACC Podcasts series, recorded by the Editor-in-Chief, Valentin Fuster, MD, PhD, MACC, has been downloaded more than 12.1 million times. Podcasts are attractive tools for modern medical learners because of their key features: accessibility, universality, and portability. They spread the voice of experts and key opinion leaders to medical students, fellows, and researchers all over the world, thereby providing a personalized and self-paced learning experience that is accessible at any time and in any place. Nevertheless, compared with traditional lectures, podcasts seem to be affected by the lack of interaction and personal feedback. Furthermore, the unregulated

nature of podcasts may raise concerns about their quality and their actual added value for teaching and learning.

CONCLUSIONS

Medical education is evolving. SoMe, video, and audio digital contents provide a digital learning experience that offers unprecedented possibilities. Although scientific and professional societies are brilliantly adapting to the changing environment, their challenge in the long term will be ensuring scientific quality and protecting medical education from the hidden dangers of the amazing digital world.

ACKNOWLEDGMENTS The authors thank Julia Grapsa and Sarah Khalaf for their endless efforts to improve the way we distribute and share high-impact cardiology science.

FUNDING SUPPORT AND AUTHOR DISCLOSURES

The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

ADDRESS FOR CORRESPONDENCE: Dr Estefania Oliveros, Division of Cardiovascular Disease, Department of Medicine, Temple University Hospital, 3401 North Broad Street, Philadelphia, Pennsylvania 19444, USA. E-mail: estefania.oliveros@temple.edu. Twitter: [@EstefaniaOS](https://twitter.com/EstefaniaOS), [@YevgeniyBr](https://twitter.com/YevgeniyBr), [@ABeneduce_MD](https://twitter.com/ABeneduce_MD), [@BakhshiHooman](https://twitter.com/BakhshiHooman), [@EZancanaroMD](https://twitter.com/EZancanaroMD), [@IndahSP_MD](https://twitter.com/IndahSP_MD), [@GinaLundberg](https://twitter.com/GinaLundberg).

REFERENCES

- Sathianathen NJ, Lane R III, Murphy DG, et al. Social media coverage of scientific articles immediately after publication predicts subsequent citations - #SoMe_Impact score: observational analysis. *J Med Internet Res*. 2020;22(4):e12288.
- Parwani P, Faza NN, Fudim M, Oliveros E, Brailovsky Y, Choi AD, et al. JACC: Case Reports: reflections from 1 year on social media. *J Am Coll Cardiol Case Rep*. 2020;2(11):1818-1823.
- Fox CS, Bonaca MA, Ryan JJ, Massaro JM, Barry K, Loscalzo J. A randomized trial of social media from Circulation. *Circulation*. 2015;131(1):28-33.
- Barakat AF, Nimri N, Shokr M, et al. Correlation of Altmetric attention score with article citations in cardiovascular research. *J Am Coll Cardiol*. 2018;72(8):952-953.
- Asatryan B, Vaisnora L, Manavifar N. Electrocardiographic diagnosis of life-threatening STEMI equivalents: when every minute counts. *J Am Coll Cardiol Case Rep*. 2019;1(4):666-668.
- Silva I, Salaun E, Cote N, Pibarot P. Confirmation of aortic stenosis severity in case of discordance between aortic valve area and gradient. *J Am Coll Cardiol Case Rep*. 2022;4(3):170-177.
- Saluveer O, Bastani H, Verouhis D, Kallner G, Jensen-Urstad M. Transseptal access through an atrial septal defect closure device resulting in open heart surgery. *J Am Coll Cardiol Case Rep*. 2022;4(11):685-687.
- Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C. A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication. *J Med Internet Res*. 2013;15(4):e85.
- Fuster V, Mann D. The art and challenge of crafting a central illustration or visual abstract. *J Am Coll Cardiol*. 2019;74(22):2816-2820.
- Rime J, Pike C, Collins T. What is a podcast? Considering innovations in podcasting through the six-tensions framework. *Convergence*. 2022;28(5):1260-1282.