Social Media as a Medium for Dermatologic Education

Benjamin R. Cooper · Anthony Concilla · J. Mark Albrecht · Aashni Bhukhan · Melissa R. Laughter · Jaclyn B. Anderson · Chandler W. Rundle · Emily C. McEldrew · Colby L. Presley

Accepted: 18 March 2022 / Published online: 25 April 2022 © The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

Abstract
Purpose of Review We explore the utility of social media platforms as educational tools in dermatology, providing a summary of how these sites are used by the public and dermatologists alike, and demonstrating ways these findings may be applied for educational purposes.
Recent Findings Over half of the world’s population utilizes social media platforms. More recently, these platforms have increasingly been used for educational purposes. In the field of dermatology, a large portion of the educational content is coming from users with no formal medical or dermatologic training.
Summary Each of the top five social media platforms in the world (Twitter, Instagram, TikTok, YouTube, and Facebook) has unique qualities which people may utilize to educate fellow users. As more of the population seeks online health information and education, it is important that dermatologists, while taking ethical considerations into account, become more comfortable facilitating educational content on social media.

Keywords Social media · Facebook · Twitter · Instagram · Youtube · Tiktok · Education

Introduction

Social media has seen a sharp rise in user engagement over the past two decades, with more than half of the world’s population having an online social media account [1]. The dramatic uptick in social media users is partly attributable to the worldwide pandemic of COVID-19 [2]. Facebook, Instagram, YouTube, Twitter, and TikTok have consistently demonstrated to be the most heavily trafficked platforms by online users [3]. These digital programs can both reach and influence a large audience. In recent years, the utility of social media for educational purposes has gained traction which has only intensified since the start of the pandemic [4]. Moreover, due to the diverse nature of accessible information, social media is employed by patients of all ages and for many uses. Examples of easily obtainable information include news updates, instructional tutorials, and the ability to acquire knowledge in various avenues, including healthcare. In fact, the use of social media in healthcare as a tool for patient education and professional communication has been increasing [5]. Specifically, the field of dermatology has seen a large increase in the amount of educational content being displayed on social media platforms, with much of the content coming from people with no formal medical or dermatological training [6••].
In this review, the aforementioned social media platforms will be examined to identify how each site can be used to educate the public, from where the information is originating, how the online spread of misinformation can be stopped, and the implications these factors have on the field of dermatology.

**Twitter**

Founded in 2006, Twitter quickly became one of the largest social media networking platforms, with a current estimate of nearly 313 million users [7]. Users have the ability to produce and share their own text, photos, and videos through short “tweets” limited to 280 characters. Moreover, a “hashtag” can be inserted into posts which creates a way of linking posts with others based on similar content. Twitter has become an online community for educators, students, and scholars to interact, engage, and share their insights on common interests [8]. Users can facilitate education through several modalities, such as tweetorials (a portmanteau merging tweet and tutorial), polls, and live features [9]. Tweetorials are a thread of related tweets that in essence creates a mini lecture series on a particular subject. Polls can be created to garner opinions from others and assess one’s knowledge of concepts. Finally, Twitter users are able to create live stream videos where members can broadcast their content to online users.

Twitter has become the most popular form of social media used for healthcare communication, especially in the field of dermatology [10]. Twitter allows the public to converse about skin diseases, thus, promoting skin disease awareness. It harbors a safe space for patients struggling with similar skin conditions to embrace social and emotional support [11]. Issues that can arise from the dissemination of misinformation by the public include inappropriate diagnoses given by non-medical professionals, unsolicited advice for treatment options, incorrect and inappropriate treatment recommendations, and the suggestion of non-beneficial home remedies. In fact, a recent study, which examined the discussion of acne on Twitter, highlighted major misconceptions and inconsistencies between the online forum respective to American Academy of Dermatology (AAD) recommendations [12]. In an effort to provide education to the public, dermatologists and the field as a whole have made great strides to increase their presence on Twitter. For example, distinguished dermatology journals such as Journal of the American Academy of Dermatology (JAAD) and Journal of the American Medical Association (JAMA) Dermatology post about the latest publications on their Twitter accounts [13]. Additionally, organizations with a substantial following, such as dermRounds Dermatology Network (@dermatology; over 19,000 followers), strive to not only educate the general online community but to also keep dermatologists up to date with new research and guidelines. Followers of this account are able to participate in clinical photo quizzes of dermatologic conditions and discuss skin disorders with other interested followers. Twitter also facilitates online journal clubs where physicians can collaborate and network on a global scale [14–].

The utilization of Twitter for educational purposes has implications for the general public, higher education institutions, and professional organizations. Considering Twitter’s involvement in healthcare, it should be recognized as an essential component for education broadcasting by dermatologists. Many board-certified dermatologists have active accounts on Twitter where they post educational content for patients and help dispel misinformation that exists on this platform [15]. Finally, a potential drawback educators may face on Twitter is the 280 character limit for tweets. However, the use of tweetorials by educators can circumvent this limitation.

**Instagram**

Instagram, founded in 2010, specializes in photo and video sharing. Current estimates report 2 billion monthly active users access the platform [16]. On this domain, users create a personal profile to post photos and videos with a short caption below each post. Users are also able to create short video clips known as “reels” which have a 15 s duration limit. Another feature includes the ability to broadcast live for up to a 4 h time period. Instagram allows users to search topics of interest by typing in a word or phrase preceded by a hashtag symbol. This allows for tailored content viewing by users. The ability to disseminate information through these features, combined with the ability to reach millions of users daily, has afforded Instagram a unique position as a platform for medical, and specifically dermatologic, education [17].

Instagram has been used for educational purposes by higher education institutions, companies, organizations, and licensed professionals and social media “influencers”. For example, many universities have their own Instagram page in order to share career advancement and professional opportunities, along with other school related activities [18]. There has also been a considerable rise in the number of active Instagram accounts by US dermatology residency programs, increasing from 9 programs in 2019 to 74 programs in 2021 [19, 20]. Some platform users are deemed “influencers” due to their large follower base and broad reach of content shared. A problem arises when influencers that are not medically trained begin to educate their followers on topics they are not qualified in. For instance, a recent study demonstrated
that board-certified dermatologists produced only a small amount of the top dermatology-related posts on Instagram [21]. In response to this spread of dermatologic misinformation, many board-certified dermatologists have utilized social media to post content specific to the field by sharing photos and videos that detail suggested products, skin routines, and treatment tips which align with medical practice and appropriate recommendations [22•]. Instagram, in this manner, can be used as an educational platform to correct and communicate accurate dermatologic information, with the goal of eventually halting the spread of misinformation.

### TikTok

With 1 billion monthly users, TikTok, founded in 2016, although the most recent, has quickly become one of the largest social media platforms available to the general public [23]. Videos with a duration limit of up to three minutes can be creatively edited with custom captions, filters, and music to be shared online. Similar to other major platforms, “hashtags” are commonly used to tailor search results to identify more specific content. Unique to TikTok, however, is the duet feature. Utilizing this feature, users can respond directly to other videos with their own videos displayed next to the original post. This feature is unique as it allows dermatologists to respond to inaccurate videos describing dermatologic diagnoses and treatments and provide correct information for future viewers. Additionally, it provides an opportunity to offer additional information regarding the original video topic, critiques, or reactions [22•]. For example, @teawithmd (Dr. Joyce) has utilized this feature to list differential diagnoses and treatments for hyperkeratosis on the feet [24].

As with the prior social media platforms mentioned, TikTok similarly has an extensive amount of dermatology-related information shared by non-dermatologist users. In a recent study, nearly half of the 171 dermatology-related TikTok videos surveyed were posted by patients or non-medically trained influencers [25]. In the surveyed videos which were categorized as educational, the content quality of videos was found to be low, even if they were highly viewed or “popular” videos. Educational quality was found to be higher and concordant with AAD guidelines when posted by a board-certified dermatologist [25–27]. With the presence of more dermatologists utilizing TikTok for dermatologic education, the risk of patients misdiagnosing themselves and inappropriately self-treating will be reduced.

### YouTube

YouTube has grown to be the world’s largest online video platform since its founding in 2005, with nearly 2.3 billion monthly users [28]. As video media is often integrated into the teaching process, YouTube has enormous potential to be utilized as a tool in education, and more specifically, health education. Recently, the website launched a new feature, named “YouTube Learning” which is directed towards those with the intent to learn new information, skills, and concepts [29]. Regarding its utilization in the healthcare field of dermatology, a study of patients with chronic urticaria found YouTube to be the second most utilized source of general health and disease specific information [30]. The video time limit of 12 h allows for in-depth lectures on the pathophysiology, diagnosis, or treatment of a disease. None of the previously mentioned platforms allow for this extensive teaching time. Likewise, videos may provide step by step tutorials on procedures or expectations for patients to have regarding an upcoming dermatologic surgery or treatment [31].

Dermatologists have recently recognized the utilization of YouTube in education, as demonstrated by a 2018 study which suggested 35% of dermatology-related videos shared on YouTube are educational in nature [32]. However, because of uploads from users without formal medical education, validity of the information shared is an important consideration. Firsthand experiences and anecdotes are highly prevalent, often clouding what is accepted as standard medical practice [33]. A study which surveyed 234 dermatology-related YouTube videos had independent reviewers assign each video a standardized score based on the quality of the information. As expected, the quality of information in videos produced by board-certified dermatologists was greater than that of other untrained influencers [34••, 35]. Yet, the YouTube algorithm does not query video searches based on quality, and videos are more likely to be viewed if a patient testimonial is included [34••]. Going forward, while respecting patient privacy, it may be beneficial for dermatologists to include patient experiences in engaging educational videos in order to reach a larger audience [36].

### Facebook

Facebook, founded in 2004, the earliest-founded platform of all mentioned in this study, has reached 2.9 billion monthly users, making it the largest social media platform available [37]. Users, which include individuals, groups, or organizations, can create a profile on which pictures,
videos, polls, and status updates can be posted and interacted with by followers or friends. Of note, Facebook purchased Instagram in 2012. Since the merger, each post on Instagram can be shared to Facebook, making “reels” a common post on Facebook accounts, as well [38]. There are numerous ways in which users have utilized Facebook’s features to educate those with dermatologic interests. “Groups,” both private and public, have been created to facilitate discussion and connect users online, many of which are created with the intent of sharing educational information. Many dermatology-related organizations and dermatologists have created accounts and share educational content regularly, as well. For example, the AAD Facebook account posts daily educational content and has over 180,000 followers [39].

The immense interest in seeking dermatology-related educational material on Facebook is demonstrated by the higher median engagement rate of educational dermatologic topics over other types of dermatology posts in both patient-centered or community related pages [40]. Although nuanced, familiarizing oneself with the platform and the ways in which it can be used to address the massive amounts of existing misinformation is crucial. As Facebook’s algorithm takes into account user engagement, content related to posts with little to no interaction are less likely to appear on a user’s news feed. Conversely, when posts are clicked on, liked, or commented on, this will increase the likelihood that similar topics will appear on a user’s news feed [41]. For dermatologists, learning to create interactive, engaging content will help to increase the reach of educational material being shared in the future, and therefore may lead to a more educated and healthy online population.

**Existing Literature Assessing Effectiveness of Social Media-Based Education**

While social media has been posited by many to facilitate an educational process given its large number in user engagement, existing literature to support this claim has been irresolute, given that measurable academic outcomes as a reflection of social media usage have yet to be documented [42]. Many studies have indicated that social media applications are an effective educational tool, both in the academic setting, and to increase the knowledge and awareness of the public [43]. These platforms have been implemented in higher education institutions as a medium to facilitate peer bonding among students and as a supplement to classroom education. In addition to enhancing the educational process and aiding collaboration among students, some studies have suggested that online domains may increase academic performance [44]. Importantly, one study indicated that educators do not support social media for educational purposes as strongly as their students did [45]. While the literature supporting the efficacy of social media for educational purposes has been elusive, its capacity to be utilized in information dissemination is without question [46].

**Ethical Considerations**

Despite the many benefits of utilizing social media for educational purposes, several ethical considerations must be accounted for when navigating this new and complex landscape. Specifically, it is important to maintain patient privacy, provide factual, evidence-based information to fellow users, and state potential conflicts of interest [47•]. In addition, interpersonal communication on social media carries its own nuances. In hopes to guide physician conduct to those building an online presence, recommendations have been established by several physician-focused professional organizations, including the American Medical Association (AMA) and American College of Physicians (ACP) [48, 49].

Aside from protecting the standard demographic information when utilizing patient encounters for learning experiences, attention to detail regarding the images used is an important consideration of online dermatology education. Since the installation of The Health Insurance Portability and Accountability Act (HIPAA) of 1996, removal of identifiers when sharing patient information has been required [50]. However, in a survey from 2008 of 271 medical blogs, 3 blogs included recognizable patient photographs [51]. Pertaining to dermatology, unique tattoos and lesions on the skin can serve as identifiers and should not be posted when utilizing a patient experience as a learning opportunity [52].

Along with the advantage of social media serving as a tool to distribute content to the online masses comes an important consideration concerning the validity of the information being shared. The recent coronavirus “infodemic”, as referred to by the World Health Organization (WHO), has magnified the importance of sharing factual, evidence-based information online [53]. Amidst this era of rapid online information propagation, a systematic review from 2021 collected healthcare-related social media misinformation rates from 69 studies. In some instances, misinformation rates reached as high as 87% of content posted [54••]. Dermatologists, and physicians in general, should anticipate the content they post online to be heavily scrutinized by colleagues and fellow users. Keeping this in mind, misinformation rates may decline, and ideas rooted in evidence-based medicine would be cultivated and shared appropriately.

Although communication via social media lacks certain aspects of in-person interaction, it is important for physicians to maintain professional conduct when establishing an online presence. The AMA has published a “Code of Medical Ethics Opinion” in an effort to guide professional
physician conduct online which establishes seven considerations [48]. In summary, physician online conduct should essentially resemble physician in-person conduct. It is the responsibility of the physician, and thus the dermatologist, to establish appropriate professional boundaries, maintain patient privacy, and hold colleagues accountable for sharing misinformation or unprofessional conduct [48]. The ACP has also published recommendations in which they state and describe five positions on multiple topics concerning physician social media use; these include confidentiality and privacy, separation of personal and professional content, patient communication, self-auditing, and awareness of potential future implications related to posted content [49]. Instances may occur in which current ideas contradict ideas previously remarked upon publicly and permanently, in the case of social media. In these cases, dermatologists are responsible for reflecting on past stances and holding themselves accountable.

Despite formal guidance from professional organizations to disclose conflicts of interest on social media, instances exist in which physicians have failed to do so [55]. A study from 2017 (7 and 4 years after the formal AMA and ACP publications, respectively) examined the Twitter accounts of 156 physicians with greater than $1000 of financial conflicts of interest (FCOI) [55]. From this cohort, only 2 (1.3%) physicians disclosed existing FCOI [55]. By including disclosures, a more trusting relationship may be established between physician and consumer. Additionally, this dis-suades physicians from participating in potentially unethical professional relationships and readers can interpret shared information with a critical lens [56]. Dermatologists should consider these disclosures when posting educational information that also endorses or promotes a product.

Social media platforms have taken some initiative to verify the identities of account users by providing a symbol to users which the platform attests are legitimate. For instance, in 2009, Twitter introduced the “Blue Check Mark” to discredit impersonator accounts [57]. Since then, the other four most popular platforms have followed suit with their own verified account designations [58–61]. The platform verification, in combination with the user listing their qualifications and credentials on their profile bio, can contribute to a more trusting relationship between social media educator and consumer. Dermatologists should consider verifying their certification if they intend to use their social media accounts for educating the general public, allowing the general public to know they hold the certification to guide, diagnose, and treat skin afflictions.

Social media is increasingly used for educational purposes in the field of dermatology. In order for reliable dissemination of information, it is important for educators to be forthcoming, factual, and professional in their conduct. Through these practices, an educational relationship of trust between dermatologists and fellow social media users can be expanded upon.

**Conclusion**

As more social media platforms become available, the opportunities for physicians, and specifically dermatologists, also continues to increase. Currently, Twitter, Facebook, Instagram, TikTok, and YouTube all provide dermatologists the ability to hinder medical misinformation dissemination. While each platform is unique to its educational offerings (Table 1), each provides dermatologists with the capability to take an active role in educating the public with accurate and evidence-based dermatologic medicine. Dermatologists can now explore these options while considering the privacy and ethical principles of their position as a physician and build a more solid base of knowledge regarding healthy and diseased skin on social media.

**Acknowledgements** The authors wish to thank Dr. Robert Dellavalle for reviewing their manuscript.

**Compliance with Ethical Standards**

**Conflict of Interest** Dr. Presley is a Section Editor for *Current Dermatology Reports*.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

**Financial Disclosure** None to disclose.

---

**Table 1** The active monthly users, commenting ability, percent utilization of social media by businesses, and direct video response capabilities for each platform

| Platform | Active monthly users | Can posts be commented on? | Percentage of businesses using the platform [62] | Direct video response |
|----------|----------------------|----------------------------|-----------------------------------------------|----------------------|
| Twitter  | 313 Million [14^]    | Yes                        | 84.4%                                         | No                   |
| Instagram| 2 Billion [23]       | Yes                        | 80.9%                                         | No                   |
| TikTok   | 1 Billion [30]       | Yes                        | 0.8%                                          | Yes                  |
| YouTube  | 2.3 Billion [36]     | Yes                        | 60.8%                                         | No                   |
| Facebook | 2.9 Billion [45]     | Yes                        | 93.7%                                         | No                   |

---

*Current Dermatology Reports* (2022) 11:103–109
References

Papers of particular interest, published recently, have been highlighted as:
• Of importance  
• Of major importance

1. Geist R, Milietello M, Albrecht JM, Presley CL, Anderson JB, Laughter M, et al. Social media and clinical research in dermatology. Curr Dermatol Rep. 2021;10(4):105–11.
2. Tsao S-F, Chen H, Tissueverasinghe T, Yang Y, Li L, Butt ZA. What social media told us in the time of COVID-19: a scoping review. Lancet Digit Health. 2021;3(3):e175–94.
3. Haenlein M, Anadol E, Farnsworth T, Hugo H, Hunichen J, Welte D. Navigating the new era of influencer marketing: how to be successful on Instagram, TikTok, & Co. Calif Manag Rev. 2020;63(1):5–25.
4. Sobaih AEE, Hasansein AM, Abu Elnasar AE. Responses to COVID-19 in Higher education: social media usage for sustaining formal academic communication in developing countries. Sustainability. 2020;12(16):6520.
5. Wong A, Ho S, Olusanya O, Antonini MV, Lyness D. The use of social media and online communications in times of pandemic COVID-19. J Intensive Care Soc. 2021;22(3):255–60.
6. Nguyen M, Yousser R, Kwon A, Chen R, Park JH. Dermatology on TikTok: Analysis of content and creators. Int J Womens Dermatol. 2021;7(4):488–9. A report which demonstrated board-certified dermatologists are responsible for a small amount (15.1%) of the surveyed posts on TikTok.
7. Malik A, Heyman-Schrum C, Johri A. Use of Twitter across educational settings: a review of the literature. Int J Educ Technol High Educ. 2019;16(1):36.
8. Carpenter JP, Morrison SA. Enhancing teacher education... with Twitter? Phi Delta Kappan. 2018;100(1):25–8.
9. Gero KI, Liu V, Huang S, Lee J, Chilton LB. What Makes Tweetorials Tick: How Experts Communicate Complex Topics on Twitter. Proc ACM Hum Comput Interact. 2021;5(2):422.
10. Pershad Y, Hangge PT, Albadawi H, Oklu R. Social Medicine: Twitter in Healthcare. J Clin Med. 2018;7(6):121.
11. Li W, Le N, Lee DJ, Reuter K. Analysis of psoriasis-related posts on Twitter: An abundance of patient-driven advocacy versus a scarcity of dermatologists. J Am Acad Dermatol. 2021;85(6):1579–81.
12. Shive M, Bhatt M, Cantino A, Kvedar J, Jethwani K. Perspectives on acne: what Twitter can teach health care providers. JAMA Dermatol. 2013;149(5):621–2.
13. Patel RR, Hill MK, Smith MK, Seeker P, Dellavalle RP. An updated assessment of social media usage by dermatology journals and organizations. Dermatol Online J. 2018;24(2):2.
14. Daneshjou R, Adamson AS. Twitter Journal Clubs: Medical Education in the Era of Social Media. JAMA Dermatol. 2020;156(7):729–30. A recent article which identified a dermatology-specific Twitter journal club and advocated for utilization of online specialty-specific journal clubs for educational purposes.
15. Sierro TJ, Young PM, Kassabian SK, Wu KK, Armstrong AW. Dermatologists in social media: A study on top influencers, posts, and user engagement. J Am Acad Dermatol. 2020;83(5):1452–5.
16. Statista. Instagram monthly active users. https://www.statista.com/statistics/253577/number-of-monthly-active-instagram-users/. Cited 20 Feb 2022.
17. Arceneaux PC, Dinu LF. The social mediated age of information: Twitter and Instagram as tools for information dissemination in higher education. New Media Soc. 2018;20(11):4155–76.
18. Bonilla Quijada MDR, Perea Muñoz E, Corrons A, Olmo-Arriaga J-L. Engaging students through social media. Findings for the top five universities in the world. J Mark High Educ. 2021;1:1–18.
19. St Claire KM, Rietcheck HR, Patel RR, Dellavalle RP. An assessment of social media usage by dermatology residency programs. Dermatol Online J. 2019;25(1).
20. Kim Y-H, Ali NS, Vidal NY. Social media use in residency recruitment during the COVID-19 pandemic. Dermatol Online J. 2021;27(6).
21. Park JH, Christman MP, Linos E, Rieder EA. Dermatology on Instagram: An Analysis of Hashtags. J Drugs Dermatol. 2018;17(4):482–4.
22. Szeto MD, Presley CL, Pulsipher KJ, Hart P, Rundle CW, Sivesind TE, et al. Dermatologist influencers on social media: Instagram Reels and TikTok interactive short videos. J Am Acad Dermatol. 2021;85(3):e185–8. An article which established that the duet feature on TikTok may significantly contribute to the potential for the platform to be used as an educational resource.
23. Backlinko. TikTok User Statistics (2022). 2020. https://backlinko.com/tiktok-users. Cited 12 Feb 2022.
24. TikTok. Dr. Joyce on TikTok. https://www.tiktok.com/@teawithmd/video/6949266193235798458?is_copy_url=1&is_from_webapp=v1&lang=en. Cited 12 Feb 2022.
25. Villa-Ruíz C, Cassamali B, Mazori DR, Min M, Cobos G, LaChance A. Overview of TikTok’s most viewed dermatologic content and assessment of its reliability. J Am Acad Dermatol. 2021;85(1):273–4.
26. Rehman R, Saad M, Huq F, Oska S, Mehregan D, Daveluy S. A cross-sectional analysis of popular hidradenitis suppurativa content on TikTok. JAAD Int. 2021;5:98–100.
27. Zheng DX, Ning AY, Levoska MA, Xiang L, Wong C, Scott JF. Acne and social media: A cross-sectional study of content quality on TikTok. Pediatr Dermatol. 2021;38(1):336–8.
28. Omnicore. YouTube by the Numbers (2022): Stats, Demographics & Fun Facts. 2022. Available from: https://www.omnicoreagency.com/youtube-statistics/. Cited 12 Feb 2022.
29. Thakur P. YouTube Learning Launched for Students, Google Play to Get Kids Section. NDTV Gadgets 360. 2020. https://gadgets.ndtv.com/entertainment/news/youtube-learning-destination-google-play-kids-section-launch-2213048. Cited 12 Feb 2022.
30. Maurer M, Weller K, Magee M, Maurer RR, Vanegas E, Felix M, et al. The usage, quality and relevance of information and communications technologies in patients with chronic urticaria: A UCARE study. World Allergy Organ J. 2020;13(11):100475.
31. Huang CM, Oi-Yee Li H, Macdonald J. YouTube as a Source of Patient Information for Mohs Micrographic Surgery: A Systematic Analysis. Dermatol Surg Off Publ Am Soc Dermatol Surg Al. 2021;47(4):552–4.
32. St Claire KM, Rietcheck HR, Patel RR, Dunnick C, Dellavalle RP. Dermatology on YouTube - an update and analysis of new trends. Dermatol Online J. 2018;24(12). https://escholarship.org/uc/item/512863f1v. Cited 12 Feb 2022.
33. Qi J, Trang T, Doong J, Kang S, Chien AL. Misinformation is prevalent in psoriasis-related YouTube videos. Dermatol Online J. 2016;22(1). https://escholarship.org/uc/item/7q9j2m5. Cited 12 Feb 2022.
34. Guzman AK, Wang RH, Nazarian RS, Barbieri JS. Evaluation of YouTube as an educational resource for treatment options of common dermatologic conditions. Int J Dermatol. 2020;59(3):e65–7. A recent study which established the quality of content in YouTube videos produced by dermatologists is higher than that of a non-medical provider.
35. Ishack S, Cooley V, Lipner SR. Assessing the Impact and Educational Value of YouTube on Skin Biopsy Procedures. Dermatol Surg Off Publ Am Soc Dermatol Surg Al. 2020;46(7):984–5.
36. Lukac D, Pagani K, Yi JZ, McGee JS. Consulting “Dr YouTube”: a content analysis of YouTube® videos related to hidradenitis suppurativa treatments. Clin Exp Dermatol. 2022;47(3):606–8.
37. DataReportal – Global Digital Insights. The Latest Facebook Stats: Everything You Need to Know. https://datareportal.com/essential-facebook-stats. Cited 12 Feb 2022.
38. Letenyei D. Facebook Owns 91 Companies, Including Instagram and WhatsApp. Market Realist; 2021. https://marketrealist.com/what-companies-does-facebook-own/. Cited 12 Feb 2022.
39. American Academy of Dermatology. https://www.facebook.com/AAADskin/. Cited 12 Feb 2022.
40. Kim WB, Marinas JEC, Vender RB. Public Engagement with Dermatology Contents on Facebook. J Cutan Med Surg. 2015;19(3):304–8.
41. Kim W, Vender R. Use of facebook as a tool for knowledge dissemination in dermatology. J Cutan Med Surg. 2014;18(5):341–4.
42. Zachos G, Paraskevopoulou-Kollia E-A, Anagnostopoulos I. Social Media Use in Higher Education: A Review. Educ Sci. 2018;8(4):194.
43. Liu Y. Social Media Tools as a Learning Resource. J Educ Technol Dev Exch JETDE. 2010;3(1). https://aquila.usmd.edu/jetde/vol3/iss1/8.
44. Maqableh M, Rajab L, Quteshat W, Masa’deh RMT, Khatib T, Karajeh H. The Impact of Social Media Networks Websites Usage on Students’ Academic Performance. Commun Netw. 2015;7(4):159–71.
45. Manca S, Ranieri M, Facebook and the others: Potentials and obstacles of Social Media for teaching in higher education. Comput Educ. 2016;95:216–30.
46. Kudchadkar SR, Carroll CL. Using Social Media for Rapid Information Dissemination in a Pandemic: #PedsiCU and Coronavirus Disease 2019. Pediatr Crit Care Med J Soc Crit Care Med World Fed Pediatr Intensive Crit Care Soc. 2020;21(8):e538–46.
47. Wolfe S, Hu S, Rundle C, Weintraub G, Dellavalle R. Healthcare Ethics and Professionalism in Social Media. In: Bercovich L, Perlis CS, Stoff BK, Grant-Kels JM, editors. Dermatoethics. Cham: Springer; 2021. pp. 185–97. A textbook chapter which examined several ethical considerations when utilizing social media for educational purposes, including patient privacy, usage of proper citation, determination of authorship of the educational content source, and differentiation between fact and opinion.
48. American Medical Association. Professionalism in the Use of Social Media. AMA. https://www.ama-assn.org/delivering-care/ethics/professionalism-use-social-media. Cited 12 Feb 2022.
49. Farnan JM, Snyder Sulmasy L, Worster BK, Chaudhry HJ, Rhyne JA, Arora VM, et al. Online medical professionalism: patient and public relationships: policy statement from the American College of Physicians and the Federation of State Medical Boards. Ann Intern Med. 2013;158(8):620–7.
50. Rights (OCR) O for C. Guidance Regarding Methods for De-identification of Protected Health Information in Accordance with the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule. HHS.gov; 2012. https://www.hhs.gov/hipaa/for-professionals/privacy/special-topics/de-identification/index.html. Cited 12 Feb 2022.
51. Lagu T, Kaufman EJ, Asch DA, Armstrong K. Content of weblogs written by health professionals. J Gen Intern Med. 2008;23(10):1642–6.
52. DeBord LC, Patel V, Braun TL, Dao H. Social media in dermatology: clinical relevance, academic value, and trends across platforms. J Dermatol Treat. 2019;30(5):511–8.
53. World Health Organization (WHO). Novel Coronavirus (2019-nCoV) Situation Report - 13. WHO; 2020. https://www.who.int/docs/default-source/coronavirus/situation-reports/20200202-sitrep-13-ncov-v3.pdf.
54. Suarez-Lledó V, Alvarez-Galvez J. Prevalence of Health Misinformation on Social Media: Systematic Review. J Med Internet Res. 2021;23(1):e17187. A systematic review which examined studies that quantified healthcare misinformation rates on social media, including several studies which identified up to 87% of posts containing misinformation.
55. Kaestner V, Brown A, Tao D, Prasad V. Conflicts of interest in Twitter. Lancet Haematol. 2017;4(9):e408–9.
56. McCarthy CP, DeCamp M, McEvoy JW. Social Media and Physician Conflict of Interest. Am J Med. 2018;131(8):859–60.
57. Stone B. Not Playing Ball. https://blog.twitter.com/en_us/a/2009/not-playing-ball. Cited 12 Feb 2022.
58. Verification badges on channels - YouTube Help. https://support.google.com/youtube/answer/3046484?hl=en. Cited 12 Feb 2022.
59. Facebook Help Center. What is a verified Page or profile? https://www.facebook.com/help/196050490547892. Cited 12 Feb 2022.
60. Mention. The Blue Checkmark on Instagram - Everything You Need to Know (2022 Update). 2020. https://mention.com/en/blog/instagram-verified-badge/. Cited 12 Feb 2022.
61. TikTok Newsroom. How to tell if an account is verified on TikTok. 2019. https://newsroom.tiktok.com/en-us/how-to-tell-if-an-account-is-verified-on-tiktok. Cited 12 Feb 2022.
62. Buffer. State of Social 2019. https://buffer.com/state-of-social-2019. Cited 26 Mar 2022.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.