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SKIN ON SOCIAL: THE INFLUENCE OF SOCIAL MEDIA ON DERMATOLOGY

For medicine as a whole and especially for dermatology, few cultural shifts have had as monumental an effect as the rise of social media. It is quickly becoming evident in our clinical practices that with unprecedented access to reams of online information, clinicians are no longer the primary source of skin health information for patients. With social media platforms like YouTube, Instagram, and TikTok, patients can peruse millions of pieces of dermatology and skin-related content; overwhelmingly created by non-dermatologists, and of varying quality and accuracy. In order to understand and engage our patients, we must be aware of the information they consume and take part in the education process. It is now well-documented that social media has a significant influence on our patients' treatment decisions.[1]

With over three billion active social media users worldwide, the sheer number of online platforms allow for unprecedented communication and spread of information.[2] With the general public increasingly turning to social media for health information, many physicians are sharing information directly with the public, and dermatologists are among the group of physicians with a growing social media presence. However, with much of the skin-related content on social media created by non-dermatologists, it is important to consider why and how this media is consumed by patients, particularly given the recent rise in dermatology interest and content.

Patients do not always use social media as their primary source of health information in an attempt to circumvent their physician as a credible source of information, but aim to use it as a complement to the traditional physician-patient exchange of information. Their motivation is to use social media as an attempt to fill the gap that they feel cannot be met by their healthcare professional. As physicians, we often summarize and filter information for our patients, whereas the preference by patients is increasingly centered on being informed about all options. These patients also believe that their doctor might not be aware of the latest breakthroughs[3] and are thus moved to investigate themselves. More concerning is that one of the leading reasons patients join online health communities is due to their physician's inability to meet their emotional and informational needs.[4]

For these patients, online social media communities are able to provide a variety of support, along with helping to bridge the gap around medical information about their condition and their everyday lives. The most common type of health-related social media use by patients is social support, with patients exchanging personal experiences and information to improve coping, esteem, belonging and competence.[5]

While social networks can provide patients with emotional support, esteem support, information, and network support[1], it can also allow for what is known as "emotional expression", which is the unique opportunity that social media allows, for patients to express their emotions freely, and without inhibitions or the concern about the immediate feelings or reactions of others, as one would experience in a face-to-face situation.[6]

A systematic review of the impact of social media on patients and their relationship with their physician shows that the most common consequence of social media use for health related reasons is patient empowerment, represented by enhanced subjective well-being, psychological well-being, and improved self-management and control. However, this review also noted worsening of patient subjective well-being, a loss of privacy and the risk of addiction to social media, along with the potential to be targeted for advertising as some of the downsides.[1]

Increased social media use by patients may also lead to an interesting effect on the patient-physician relationship. Health-related social media use by patients leads to more equal communication between the patient and the healthcare professional, as well as more harmonious relationships between physicians and patients. However, it has also been shown to increase switching of healthcare providers and, in some instances, suboptimal interaction between the patient and their physician.[1]

Armed with information they have learned from social media sites, patients feel more confident about their treatment options and feel they can more easily communicate with their physicians. However, a physician's negative reaction to what a patient learned from social media leaves the patient feeling disempowered and lowers their subjective well-being.[4] Specifically, negative reactions like discounting the accuracy of the online information, discouraging their online research, or suggesting the doctor should be the patient's primary source of information, made patients seek a second opinion or be less likely to share what they had learned with their physicians. These reactions however do not ultimately change a patient's online behaviour.[4]

Social media use can also be risky for both patient and doctor. Physicians cannot control the quality or accuracy of the information that patients are exposed to, but as physicians we have some responsibility for the decisions taken by patients under our care.[6] Therefore, to the extent possible, it is important for us to have an awareness of the social media content our patients consume.

Instagram, one of the most popular image-sharing platforms for both patients and dermatologists alike has 1.074 billion active users on a monthly basis.[10] With 67% of users falling within the 18-34 age range, there is an almost equal distribution between males and females.[7] Top hashtags (words or phrases used to group or promote subjects) among this group of users in descending order are "acne, "Botox," "laser,", and "filler", with procedural or cosmetic dermatology-related hashtags being used over 50% more frequently than those of medical dermatology (**Table 1**).[8] Of the medical dermatology hashtags, "acne" was used most frequently, followed by "eczema" and "alopecia".[9]

On Instagram in particular, some of our own have 'gone viral', with dermatologists like Dr. Sandra Lee, aka Dr. Pimple Popper, propelled to superstardom; bringing with them positive visibility to dermatology, and accessible satisfying medical education to patients around the world. At the time of publication, Dr. Lee has 4.4 million followers for whom she posts a breadth of both medical and cosmetic dermatology content. A study looking at the top 10 dermatology influencers on Instagram showed that educational posts had the greatest presence, making up about 50% of sampled content, followed by 30% being comprised of personal posts and 10% each being comprised of accomplishments and advertisements. YouTube dermatology posts on the other hand were almost entirely educational in nature (90%). Of the social media platforms, Instagram users have the highest user engagement as well as the highest median subscriber count.[11] In addition, it appears that educational content is exactly what social media followers

Most Common Dermatologic Diagnosis		Most Common Dermatologic Procedures	
Acne	1,852,029	Botox	1,847,196
Eczema	406,904	Laser	1,398,163
Alopecia	291,652	Filler	626,494
Hairloss	287,587	Juvederm	398,056
Psoriasis	227,413	Restylane	226,889
Pimples	209,775	Laser hair removal	186,149
Rosacea	78,502	Dysport	136,821
Cyst	72,112	Tattoo removal	112,993
Rash	68,833	Coolsculpting	108,295
Melanoma	68,743	Body contouring	105,485
Skin Cancer	65,776	Acne scars	105,134
Hyperpigmentation	47,027	Melasma	98,248
Atopic Dermatitis	5,132	Sun Damage	73,332
Seborrheic Dermatits	2,016	Laser Tatt0o removal	52,611
Contact Dermatitis	1,833	Dermalfillers	130,429
Folliculitis	820	Kybella	45,166
Tinea	800	Radiesse	39,865
Benigntumour	641	Chemicalpeel	76,009
Actinic Keratosis	504	Radiofrequency	37,393
Molluscum Contagiousum	259	Ultherapy	36,481
Total Medical Dermatology-Related	3,722,970	Total Procedural Dermatology-Related	5,893,190

Board Certified Dermatologist	716
Dermatologist	166,150
Dermatology	415,858
Total Hashtags Queried	10,197,884

Table 1. Top Hashtags related to medical and procedural dermatology on Instagram; adapted from Park et al.

crave, as educational posts by dermatologists had the highest median engagement.

Medical organizations have also started to see the value of social media, with the American Academy of Dermatology, the Journal of the American Academy of Dermatology and the Canadian Dermatology Association all maintaining a social media presence. It seems, however, some techniques may be a little dated. A recent look at skin cancer prevention messaging via Facebook found that most messages from professional dermatology organizations were didactic in nature and focused on a strategy of fear appeal, which has been proven ineffective in gaining social media influence.[12]

This 'influence', in terms of popularity and transmissibility on social media, is key for effective transmission of health information. The dissemination of accurate and high-quality information by a board-certified dermatologist is pivotal to public skin health education, as well as dispelling false and potentially harmful misinformation. Unfortunately, dermatologists only make up a fraction of those providing dermatology information on social media platforms, with board-certified dermatologists comprising only 4% of all Instagram accounts with popular dermatology content.[13] Even more concerning is that 93% of all Instagram influencers featured self-promotional posts or directly promoted brands, products, or

services[13] , raising significant conflicts of interest of which patients may not be aware.

Further concerns lurk across the other social media landscapes. With acne affecting an estimated 80% of young Canadians aged 12-24, this social-media savvy generation is a ravenous consumer of acne health information via social media, with YouTube as their platform of choice.[14] A study looking at acne videos on YouTube showed that in comparison to healthcare-sourced videos, non-health care sources were less accurate, and of lower quality, but had a higher mean number of views. They were more engaging than health care sources, despite the fact that videos by universities and professional organizations were most accurate and had the highest quality and viewer experience.[15]

With misinformation rampant, significant time and resources are required of dermatologists to dispel the inaccuracies patients learn from social media. A recently-published survey of patients at a U.S. medical clinic showed that of 130 respondents, 45% consulted social media for acne treatment, interestingly with higher rates (51%) in adults than in adolescents (41%). As expected YouTube and Instagram were the most commonly used platforms, and women were 75% more likely to seek out acne treatment advice on social media. The advice provided to them online, unfortunately, did not hit the mark, with only 7% reporting significant improvement in their acne from social media acne treatment advice. Concerningly, most of the advice encouraged users to try over-the-counter products (81%) and/or dietary modification (40%). Of the study subjects, 17% started an oral supplement on the advice of a social media personality. Only 31% of those following social media advice made changes which were consistent with the AAD clinical guidelines.[16]

TikTok, the world's fastest growing social media platform (**Table 2**)[17] where users share short-form videos, is no better. In *Pediatric Dermatology*, Zheng et al reviewed the top 100 acne videos on TikTok using DISCERN, a validated instrument for the evaluation of consumer health information. The overall content quality rating of the videos indicated "information with serious-to-potentially-important shortcomings".[18] With this in mind, it is alarming to note that by the completion of their study, videos on TikTok with "#acne" were viewed 1.8 billion times.

With potentially dangerous misinformation flooding social media, how do dermatologists ensure that patients are exposed to up-to-date, valid, and accurate information from ethical sources? We know that patients use social media to make decisions regarding treatment[1] so it is important that the medical information provided on social media comes from reliable sources.

Dermatologists are uniquely positioned to provide patients with the valid and accurate information they seek, and evidence is mounting for social media as a burgeoning vehicle for public health education and awareness. As an example, a 2016 study identified an important opportunity to deliver skin cancer prevention information via social media given the high correlation between young adult females who use Instagram and/or Twitter with indoor tanning behaviors.[7]

Hashtag	Number of views as of 9/18/2020	Number of views as of 2/9/2021
Acne	3.0 billion	6.7 billion
Alopecia	407.8 million	1.1 billion
Cyst	315.3 million	649.4 million
Warts	33.7 million	39.5 million
Skin cancer	35 million	43.2 million
Eczema	32.6 million	74.5 million
Rosacea	31.6 million	80.6 million
Psoriasis	29.5 million	84.0 million

Table 2. Number of views for top dermatologic diagnosis on Tiktok in September 2020 and in February 2021.

Large research gaps still remain in this domain, however, information is quickly emerging which will allow us to advance the strategic use of social media to inform patients. In order to share information with the public, effective dissemination, specifically message transmission in the form of "shares" and "retweets" is key. Including media formats such as videos and photos has been shown to be one of the most effective methods of retransmission, with videos retransmitted 63% more often, and photos 27% more often. Including a hashtag increased shares by 12%, and actionable information is also known to be shared at a higher rate.[19] Some engagement features, such as the inclusion of URLs, have been shown to decrease message transmission. Regardless, from a public education perspective, URLs are a powerful tool and the use of hyperlink integration in posts can direct users to other reliable online resources for additional health information.

In summary, social media provides us with the unique opportunity to engage with our patients and the wider community and affords us the opportunity to disseminate accurate, quality and informative medical information to patients. As medicine evolves, the physician's duty to engage and inform patients must move beyond the clinic space, and into the digital space of social media where patients are seeking reassurance and information.

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