Title
Dermatology on Reddit: elucidating trends in dermatologic communications on the world wide web

Permalink

Journal

Authors
Buntinx-Krieg, Talayesa
Caravaglio, Joseph
Domozych, Renee
et al.

Publication Date

DOI

Copyright Information

Dermatology Online Journal ‖ **Commentary**

Dermatology on Reddit: elucidating trends in dermatologic communications on the world wide web

Talayesa Buntinx-Krieg[1] BA, Joseph Caravaglio[1] BA, Renee Domozych[1] BA, Robert P Dellavalle[2,3,4] MD PhD MSPH

Affiliations: [1]University of Central Florida College of Medicine, Orlando, Florida, [2]Department of Dermatology, University of Colorado Anschutz Medical Campus, Aurora, Colorado, [3]Department of Epidemiology, Colorado School of Public Health, University of Colorado Anschutz Medical Campus, Aurora, Colorado, [4]Dermatology Service, Eastern Colorado Health Care System, US Department of Veteran Affairs, Denver, Colorado

Corresponding Author: Robert P. Dellavalle, MD, PhD, MSPH, Chief, Dermatology Service, Department of Veteran Affairs Medical Center, 1055 Clermont Street, Box 165, Denver, CO 80220, Email: robert.dellavalle@ucdenver.edu

Abstract

Platforms of social media, including the website Reddit, have become increasingly popular sites for users to communicate medical information. A study investigating dermatology content on Reddit has not been performed in the current literature. The purpose of this study is to enumerate the dermatology subreddits, quantify subscribers, and characterize posts to estimate the presence of dermatology-related content on Reddit. A Reddit search of the fourteen most common skin diseases globally was performed. Additionally, the terms "dermatology", and "skin" were searched in order to identify more subreddits relevant to the field. Dermatology-related subreddits that had ≥1000 subscribers were evaluated for content and categorized for analysis. We identified 38 subreddits related to dermatology with subscriber numbers ranging from 52 to 209,973. For 17 of the 38 subreddits that were further analyzed, most posts fell under the category of "seeking health/cosmetic advice." Reddit serves as a communication stage for individuals to discuss, engage, and connect on dermatologic topics. Furthermore, the platform offers an opportunity for medical professionals to distribute evidence-based information concerning dermatologic conditions.

Keywords: Reddit, dermatology, social media, skin diseases, upvote

Introduction

Reddit is an entertainment and social networking website centered on building communities for individuals with similar interests to come together and share information. The site is structured around a multitude of user-generated subreddits which act as forums for individuals to post ideas, questions, and links to news, images, and videos. This format allows for users to produce and consume information that is targeted to their particular areas of interest. The site allows for users to up- or down-vote posts such that posts generating the most up-votes are promoted on the forum and seen by a greater number of users. With a simple interface, quick registration process and vast collection of information, it has become one of the most popular websites on the world wide web (**Figure 1**). Reddit is currently ranked 27th on the Alexa list of the top 500 sites on the web, which ranks sites based on a combination of daily visitors and page-views over the past month [1].

The presence of dermatology on social media has been reported in the literature [2]. There have been studies investigating dermatology content on websites such as YouTube, Tumblr, Pinterest, and Instagram [3-6]; however, a study of such content on Reddit has not been performed. A comparison of these websites can be found in **Table 1**. Most medical specialties are represented to some extent on Reddit and dermatology is no exception. There are many dermatology-related subreddits with various quantities of subscribers. The purpose of this study is to enumerate the dermatology subreddits, quantify subscribers, and characterize posts to estimate the presence of dermatology-related content on Reddit.

Methods

Data was collected by authors TB and JC on July 6, 2016 - July 7, 2016, July 11, 2016, and July 16th, 2016.

Figure 1. *Example of Reddit user-interface.*

The fourteen most common skin diseases globally as identified by the Global Burden of Disease (GBD) study [7] were searched using the Reddit search function including: acne vulgaris, alopecia, cellulitis, decubitus ulcer, eczema, fungal skin infections, impetigo, molluscum contagiosum, non-melanoma skin cancer, pruritis, psoriasis, scabies, urticarial, and viral warts. Searches included disease names used by the medical community as well as colloquial terms for the diseases (i.e. itching and pruritus). Additional subreddits related to dermatology were found by searching the following terms on the Reddit search function: "dermatology," and "skin." The search for "skin" yielded multiple pages of results. The top 30 pages of results, each containing 25 subreddits (a total of 750 subreddits), were screened for content relevant to dermatology. In order to assure a more extensive search, SnoopSnoo, a Reddit and subreddit analytic search engine was used to find additional subreddits related to dermatology using the terms "dermatology" and "skin." Only subreddits with 50 or more subscribers were included in the study owing to inactivity in those with fewer subscribers and an inadequate number of posts to be sufficiently characterized.

Dermatology-related subreddits that had 1000 subscribers were evaluated for content by searching the first two pages of posts (top 50 posts) and categorizing posts as either health/cosmetic advice, personal experiences, medical/dermatologic education, promotional, dissatisfaction with expert medical advice, healthcare cost, or not applicable. Posts categorized as health/cosmetic advice directly posed a question or simply asked for advice regarding a dermatologic condition or cosmetic concern related to a dermatologic condition from the subreddit community. Personal experience posts were recounts of life events related to a dermatologic condition without posing a question or asking for advice from the subreddit community. The medical/dermatologic education category was characterized by informational posts that sought to disseminate knowledge concerning a dermatologic condition or treatment, most often links to articles or educational videos. Promotional posts were those that directly advertised a product, treatment, or new technology related to a dermatologic condition. When an individual's post was motivated by, or mentioned a negative experience with a healthcare professional, the post was categorized as dissatisfaction with expert medical advice. Any post that was motivated by, or mentioned the high cost of medical care or medication was categorized as healthcare cost. If a post did not fall under the above categories, or was irrelevant to the fields of medicine/dermatology, it was categorized as not applicable.

Results

We identified 38 subreddits related to dermatology

Table 1.

Site	Benefits	Hazards	Uniform Resource Locator (URL)
Reddit	Specific and targeted forums, anonymous posting, active user base, multimedia sharing capability	Responses largely unmoderated, anyone can respond without verification of level of education or conflicts of interest	http://www.reddit.com
Tumblr	Micro-blogging platform with simple user interface	Content posted to blogs by individuals without verification of level of education or conflicts of interest	http://www.tumblr.com
YouTube	Vast user population with over one billion unique visitors monthly, one of the most trafficked global sites on the internet, available in 61 countries across 61 languages	Difficulty in identifying sources and credentials and free availability to upload can compromise the delivery of evidence-based medicine	https://www.youtube.com
Pinterest	Over 70 million users, can create and share unique bookmarks called "pins" and larger collections called "boards" and associate them with specified search terms	With 80% of the user population comprised of women, outreach to males may be more limited, results are not displayed based on popularity thus making it difficult to assess the popularity of dermatology related posts	https://www.pinterest.com
Instagram	Vast user population with approximately 75 million daily users, "hashtags" allow users to navigate easily to posts that are related to each other, ability to post pictures and videos, 90% of the 150 million users are under the age of 35 thus making this platform a unique means to reach younger demographic populations	A younger and predominately female demography limits outreach to older populations	https://www.instagram.com

with subscriber numbers ranging from 52 to 209,973. Results are shown in **Table 2**.

There were 17 subreddits that met criteria (subscribers 1000) for categorization of the top 50 posts. Post categorization is depicted graphically in **Figure 2**. For 12 of the 17 subreddits that were further analyzed, most posts fell under the category of "seeking health/cosmetic advice." The remaining five subreddits were r/nails, r/hair, r/popping, r/compulsiveskinpicking, and r/skincarescience. The majority of posts in r/nails and r/hair fell under the "not applicable" category, whereas most posts in r/popping and r/compulsiveskinpicking were categorized as "personal experience." Posts in the r/skincarescience subreddit largely fell under the category of medical/dermatologic education.

Discussion

The Reddit user interface allows the investigator to gauge popularity of certain topics through subscriber and vote counts. Our results indicate that Reddit serves as a communication platform for individuals to discuss, engage, and connect with regard to dermatologic topics. There exist multiple highly-active dermatology-relevant subreddits with thousands of subscribers, and within these digital spaces there is a wealth of information. As such, Reddit represents a unique platform where dermatologists, academic journals, and dermatology-related advocacy groups can help to address and educate the community about trending and popular dermatology topics.

Table 2.

Dermatology-Related Subreddit	Number of Subscribers
r/SkincareAddictions	209,973
r/Popping	70,360
r/Hair	23,004
r/SkincareAddicts	9,880
r/Acne	7,992
r/CompulsiveSkinPicking	7,339
r/Tressless[a]	5,394
r/Eczema	4,122
r/Psoriasis	3,862
r/30PlusSkinCare	3,623
r/Nails	2,081
r/Accutane	1,958
r/Dermatology	1,914
r/Tretinoin	1,530
r/SkinCareScience	1,344
r/Rosacea	1,083
r/Trichotillomania	1,023
r/SkinDietAndNutrition	904
r/Vitiligo	725
r/Skin_Care	464
r/TruePopping	296
r/SkinCareTips	266
r/TSWithdrawal[b]	258
r/Dermlife	225
r/SebDerm	178
r/Alopecia	146
r/Melanoma	135
r/SkinCareAddictsIndia	88
r/DermatologyDDx	83
r/Scleroderma	77
r/StaphAcne	70
r/AcneMakeup	70
r/Dyshydrosis	66

Dermatology-Related Subreddit	Number of Subscribers
r/Ichthyosis	64
r/SkinIt	60
r/BadSkin	55
r/CosmeticDermatology	52
r/RosaceaHelp[c]	--

Interestingly, in over 70% of the subreddits analyzed for post content, the most common topics of discussion overall were regarding dermatologic/cosmetic advice. Reddit users who present questions about their personal health on these forums have the opportunity to receive advice from other members who may be experiencing similar health concerns. Users seeking advice most commonly asked for help in identifying cutaneous eruptions, determining which medications they should be prescribed, and determining whether certain medications are causing specific symptoms they are experiencing. In this way, these dermatology subreddits might act as an intermediary step between recognizing the need for dermatologic advice and making an appointment with a physician. Furthermore, for individuals with milder conditions or an inability to pay for healthcare, these subreddits (in addition to other websites) may be the sole source of dermatologic advice and counseling. Dermatologists and other healthcare professionals that visit these subreddits, therefore, have the opportunity to provide users with informed, educated, and evidence-based responses. This type of communication on the web may help to promote awareness of dermatologic diseases and disorders in an evidence-based manner. Better understanding and characterizing the information being disseminated on websites such as Reddit can help dermatologists assure that users seeking health advice are not receiving erroneous information that may, ultimately, negatively impact their health. For instance, in a post titled "How to get a tan as safe as possible this summer?" a user was seeking advice from others regarding how to obtain a tan "safely." Unfortunately, other users responded with comments advocating to "use a sunscreen with SPF somewhere between 8-15 and you will still tan" and comments mentioning that "gradual tanning" is safer than "quick tanning" and can be achieved using sunscreen with low SPF. Posts, such as this, represent avenues for dermatologists and health advocacy groups to step in and provide the users with true, honest, and informative facts that may help to clear circulating misconceptions.

The five subreddits that deviated from the norm with regard to post content were r/nails, r/hair, r/compulsiveskinpicking, r/popping, and r/
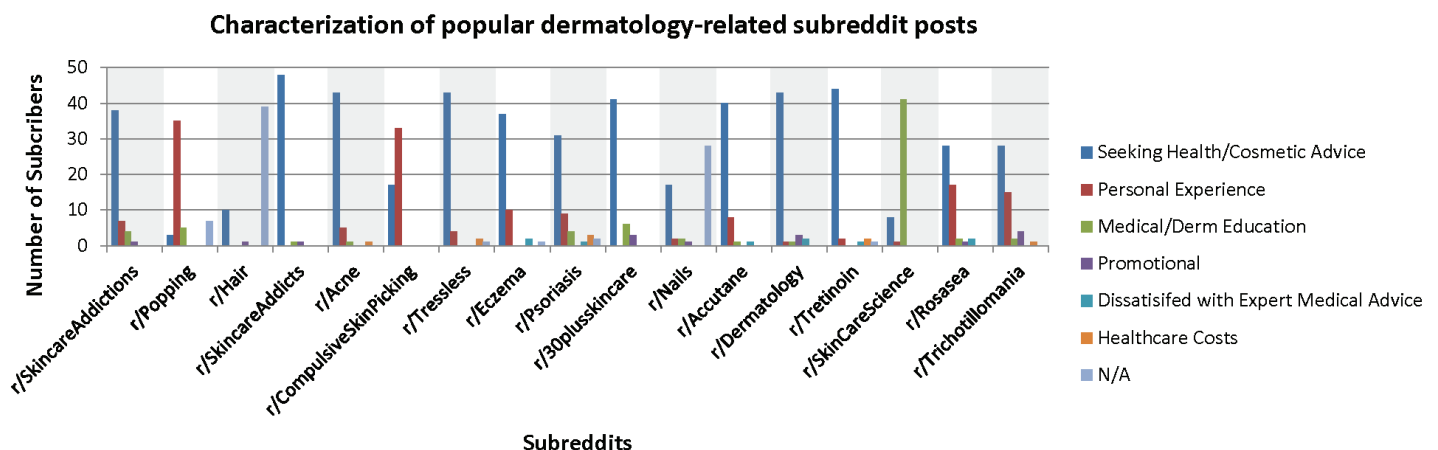

Figure 2. *Characterization of popular dermatology-related subreddit posts. From left to right, subreddits are ordered from highest to lowest number of subscribers. Only those with 1000 subscribers were analyzed for post categorization.*

skincarescience. The content of the first two, r/nails, and r/hair were characterized by a paucity of medical and dermatologic information and an abundance of information related to cosmetology. Content analysis of the subreddits r/compulsiveskinpicking, and r/popping revealed a multitude of personal experiences. The personal experiences in r/compulsiveskinpicking were textual and mostly revolved around inner turmoil and cosmetic consequences of habitual skin manipulation. Contrastingly, dermatology content in the second largest subreddit identified during our analysis, r/popping, was most often photographic or video footage of open/closed comedone extraction, surgical and non-surgical cyst extraction or draining, and blister popping. Given this subreddit's popularity, it appears as if this type of graphic content appeals to a large number of users. Lastly, r/skincarescience greatly differed from other subreddits categorized for content with most posts mostly falling under the medical/dermatologic education category. Posts often cited primary medical literature on PubMed and questions revolved around a multitude of scientific topics related to the skin. This subreddit was private and required a preliminary screening process in order to subscribe, thus limiting subscribers to a very specific population more likely to engage in scientific discussion.

A study by Cole et al. evaluated health advice concerning diabetes, chickenpox, and human immunodeficiency virus (HIV) from internet discussion forums, including Reddit, Mumsnet, and Patient, to determine the quality and quality characteristics of the health information shared [8]. The authors surveyed eight UK-qualified medical doctors and nine UK-based non-medically qualified individuals to assess the information found in these online discussion forums. Medically qualified doctors and non-medically qualified individuals completed 73% and 27% of the assessments, respectively. Results showed over 85% of threads assessed contained medically/scientifically accurate information and over 77% contained at least some medical information that was expected. There were only three occasions in which an assessor thought information might lead to an individual making a "somewhat" or "very" ill-advised decision and three separate occasions in which an individual might be led to act in a way that would put their health at

risk. Thus, the authors concluded that the discussion forums were capable of producing health information of reasonably high quality. Given the predominance of users seeking dermatologic advice on Reddit, there is great merit in follow up studies, similar to the Cole et al. study, examining the content and accuracy of replies to posts seeking dermatologic advice. The lack of self-identified physicians offering advice on these subreddits might relate to potential legal ramifications or the option to anonymously post and reply.

Conclusion

Reddit offers a unique opportunity for medical professionals and healthcare advocates to disseminate evidence-proven information concerning dermatologic conditions such that users may have access to accurate medical information. Better understanding the nature of medical and health-care related discussion taking place on social media websites can help to dispel circulating misconceptions and erroneous information that might negatively influence the health of social media users. Providing this population with safe and evidence-based information can expand our efforts to educate the public about dermatologic conditions and the prevention of the skin cancer.

References

1. "Top Sites." Alexa Top 500 Global Sites. N.p., n.d. Web. 20 June 2016.
2. Amir M, Sampson BP, Endly D, Tamai JM, Henley J, Brewer AC, Dunn JH, Dunnick CA, and Dellavalle RP. Social networking sites: emerging and essential tools for communication in dermatology. JAMA dermatology. 2014. 150(1):56-60. [PMID: 24196212].
3. Correnti C, Boyers L, Karimkhani C, Roth G, and Dellavalle RP. Dermatology on Tumblr. Dermatology Online Journal. 2014. 20(5):22642. [PMID: 24852781].
4. Whitsitt J, Mattis D, Hernandez M, Kollipara R, and Dellavalle RP. Dermatology on Pinterest. Dermatology Online Journal. 2015. 15:21(1). [PMID: 25612127].
5. Boyers LN, Quest T, Karimkhani C, Connett J, and Dellavalle RP. Dermatology on YouTube. Dermatology Online Journal. 2014. 15:20(6). [PMID: 24945641].
6. Karimkhani C, Connett J, Boyers L, Quest T, and Dellavalle RP. Dermatology on Instagram. Dermatology Online Journal. 2014. 15:20(7). [PMID: 25046455].
7. Hollestein LM and Nijsten T. An Insight into the Global Burden of Skin Diseases. Journal of Investigative Dermatology. 2014. 134(6):1499-501. [PMID: 24825057].
8. Cole J, Watkins C, Kleine D. Health Advice from Internet Discussion Forums: How Bad Is Dangerous? Journal of Medical Internet Res. 6;18(1):e4. [PMID: 26740148].