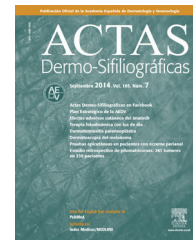




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REVIEW

e-Dermatology: Social Networks and Other Web Based Tools[☆]



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Abstract The use by patients of social networking sites and the Internet to look for health related information has already become an everyday phenomenon. If, as dermatologists, we want to be part of this new conversation and provide quality content, we will have to adapt to digital media and find new ways of communicating with both our patients and our colleagues. Dozens of Spanish dermatologists have already ventured into the online space and have begun to provide important content through blogs, which they also disseminate via the social media. However, the use of these new technologies can also pose certain risks from the standpoint of ethics and our codes of practice and even place an individual's digital reputation in jeopardy. Another aspect of this new situation is that the Internet produces information saturation, and the appropriate use of certain tools can help to improve our productivity and prevent such information overload or *infoxication*.

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e-Dermatología: redes sociales y otros recursos web

Resumen La utilización de las redes sociales e Internet como herramientas para buscar información médica por parte de los pacientes es ya un fenómeno cotidiano, y si los dermatólogos queremos participar en esa conversación, aportando contenidos de calidad, deberemos adaptarnos a este nuevo escenario e incorporar nuevas maneras de comunicarnos, tanto con pacientes como con otros profesionales.

Decenas de dermatólogos españoles han roto ya esa brecha digital y han empezado a aportar contenido relevante en forma de blogs, cuyos contenidos difunden a través de las redes sociales.

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Pero la utilización de estas nuevas tecnologías no se encuentra exenta de riesgos desde un punto de vista ético y deontológico, además de poner en juego nuestra reputación digital.

Internet también conlleva una saturación por exceso de información, y el adecuado uso de ciertas herramientas puede evitar esa *infoxicación* y mejorar nuestra productividad.

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Introduction

Over the last 20 years, information and communication technologies and the Internet have given rise to a radical change in the practice of medicine, especially in the doctor-patient relationship. In this new scenario, as dermatologists, we must learn to adapt to the use of these emerging technologies to better understand our patients and also to be in a position to benefit from tools that can improve our dermatological knowledge.

According to data for 2014 from the Spanish National Statistics Office, more than 20 million people between the ages of 16 and 74 years use the Internet every day in Spain, and this figure is rising every year.¹ The use by patients of the Internet to seek medical information is increasingly common, occurring in almost half of all medical consultations (44%-47%).^{2,3} In most cases, the search is undertaken to complement information provided by a doctor.

Several recent studies, including 5500 physicians, have reported that the use of social networking websites ranged from 59% to 89%, although the percentage of dermatologists was lower than that of general practitioners.^{4,5} A Spanish study on Internet use by primary care and hospital physicians carried out in 2009 showed that 30.8% of those surveyed reported that the Internet complicated their relationships with patients and over 30% felt that their credibility was undermined by patients' Internet use.⁶

Web 2.0, e-Health and Personal Learning Environments

Web 2.0 has been characterised by various authors as a new generation of the Internet that promotes open communication and collaboration through the active participation of users in social networks using a variety of fixed and mobile devices.^{7,8} There are many examples of Web 2.0 technologies (social networks, blogs, wikis, etc.), and their application in the health sector has given rise to the term e-health.⁹ By analogy, we can also talk about e-dermatology or dermatology 2.0. We have gone from being passive recipients of information to taking an active role in the production and exchange of knowledge, and this shift is bringing about an inexorable change in clinical practice, in the physician-patient relationship, and in the way we learn and teach dermatology.

The technical characteristic of this "new" World Wide Web—the Internet as a platform for participation, user-centered design, services-based architecture, the decentralization of contributions, and new ways of sharing and publishing information—have increasingly blurred the boundaries of formal and informal learning. In this context a new concept has emerged, that of the personal learning

environment (PLE), defined as the set of tools, information sources, connections, and activities that each person uses assiduously in order to learn.¹⁰

Our PLE can encompass a wide range of tools and sources, including social networks (when we use them for educational purposes), feedreaders (tools used to filter the online information that interests us), cloud storage services (such as Dropbox, Drive, etc.), online access to medical journals, blogs, bibliographic reference managers, and notebooks that allow us to collect, store, and retrieve information (such as Evernote).

Online Reputation

We are now operating in a new environment, characterized by new rules and new ways of interacting with others, in both our personal and our professional lives, and the boundaries between the two are not always clearly defined. Many of us make personal information public on the Internet, and this information becomes part of our online identity, although we are not always fully aware of how this works. Furthermore, information about our professional and personal activity continually finds its way online; sometimes this is content we produce ourselves, but it can also originate from third parties. Our online identity is shaped by this gradual accumulation of content and, once established, it is difficult to change; damage can be irreversible. Moreover, because the Internet is fed by the contributions of others, all medical professionals have an online reputation whether or not they make use of social networking sites or participate personally in new technologies. It is only a question of time before a patient will turn to a search engine to obtain more information about the dermatologist they intend to consult about their health. When they do, there are 2 possible outcomes: 1) the search does not generate any results (which means that the dermatologist in question has no online identity); or 2) the search does generate results and the information the patient obtains about the physician (embarrassing pictures, reviews posted by other patients, etc.) may be perceived by the user as either positive or negative.¹¹

The term *online identity* is defined as the sum of all the information available on the Internet about a person, brand, or organization. The term *online reputation*, on the other hand, refers to the collective perception of a person, something that, because it is external, is not under our control.

The Dermatology Blogosphere

A blog is a web site made up of short articles (posts) typically displayed in reverse chronological order. Blog authors (bloggers) can also interact with their readers through

comments and replies. Depending on its content and the author's objectives, it may be defined as an opinion blog, an educational blog, or a corporate blog. The blog is one of the best tools for building a solid online reputation.

Free services, such as Blogger and Wordpress, provide an easy and intuitive platform for creating and maintaining blogs, even for people with only scant technology expertise.

In the case of health blogs, it is important to include guarantees to help readers establish that the content of the page they are reading is reliable. There are a number of such accreditations and certifications, such as the Health on the Net Foundation (known by the code HON). A health web page should provide clear information about the following aspects: authorship, purpose, confidentiality, references to the sources of information used, transparency with respect to authorship, sources of funding, and editorial policy.

In this context, the dermatology blogosphere is the set of all the blogs published by dermatologists for various reasons and with differing objectives. In Spain, the dermatology blogosphere has grown significantly in recent years; some of the blogs are written primarily for a professional audience and others target patients or are used to strengthen a personal brand. Excluding blogs of a more corporate nature, the following is a selection of the 10 most important blogs in the current scenario (sorted by Google ranking).

1. Dermapixel (www.dermapixel.com). The aim of this blog, written by Dr. Rosa Taberner since 2011, is purely educational, and the target audience includes primary care physicians, pediatricians, dermatology residents, and other medical professionals. Each weekly post describes a clinical case, which is resolved within 4 days. In 2014, all of the cases were published in an electronic book with the same name.¹²
2. Dermatología y más cosas (Dermatology and more: <http://dermatologiaymascosas.blogspot.com.es/>). This blog, written by Dr. María José Alonso since 2009, was Spain's first blog on dermatology. It targets patients as well as professionals, and the posts are almost always developed around a story.
3. Blog de Dermatología Dr. Lorea Bagazgoitia (<http://dermatologia-bagazgoitia.com/>). This blogger discusses topical issues and her focus is on informing the general public. She also writes about the issue of albinism in Africa.
4. Dermatología Madrid (<http://ricardoruizdermatologo.blogspot.com.es/>). The target audience of this blog are patients, and many of the posts are related to questions about cosmetic surgery. The blogger is Dr. Ricardo Ruiz.
5. Dermatología-Madrid (<http://sergiovano.blogspot.com.es/>). Dr. Sergio Vañó writes this blog for the general public and for professionals, with particular emphasis on topics relating to trichology.
6. Cuaderno en Piel (<http://lauzuricaderma.com/>). Since 2013, Dr. Eduardo Lauzurica has been publishing this blog for both patients and professionals. His posts are comprehensive reviews of different topics written in a very accessible and comprehensible way.
7. Dermatología en la Costa del Sol (<http://javierdelboz.blogspot.com.es/>). In this blog, Dr. Javier del Boz discusses various current topics of interest to patients and health professionals.
8. El Blog de Piel (<http://dermatologodebenito.es/el-blog-de-piel/>). In his posts, Dr. Valentín de Benito deals with a broad range of topics using very accessible language, often seasoning his writing with references from the world of cinema.
9. Cuando una herida en la piel no se cierra (When a skin wound does not heal: <http://www.elenaconde.com/>). Dr. Elena Conde focuses on the many and varied aspects of chronic ulcers, a topic she deals with in depth.
10. Un dermatólogo en el museo (A dermatologist in a museum: <http://xsierrav.blogspot.com.es/>). And finally, Dr. Xavier Sierra delights us almost daily with his posts on art and skin, a must-read blog for anyone interested in the history of dermatology.

The Use of Social Networking in Dermatology

A social network is defined as a community of individuals who relate to each other on the basis of a specific criterion, which may be an interpersonal or professional relationship, for example, or a health condition. The translation of this concept to the Internet has given rise to virtual social networks—communities that interact by way of information systems which facilitate communications between the members of the network.

In January 2015, 47% of the population in Spain had one or more social networking accounts, an increase of 12% over the previous year. Users of social networking sites spend an average of 1 h 54 minutes daily accessing the network, 38% of this time from a mobile phone.¹³

Although many dermatologists do not use social networks for professional purposes, it is clear that most of their patients do, and in many cases they do so to look for information on health-related topics.

Social networks can potentially empower, engage, and educate both patients and doctors in a common setting. They offer us a unique opportunity to connect with our patients by providing quality information on the Internet, not only as individual dermatologists but also as institutions and dermatology journals.¹⁴⁻¹⁷ Neither should we overlook their potential as a learning tool for dermatologists. For bloggers, social networks are an ideal platform for publicizing the content of their posts.

On the one hand we have the general social networks which, while they were not created to deal specifically with medical issues, have users who exchange information and experiences on health issues (Fig. 1). On the other hand, we have specialized networks, created specifically to facilitate interaction between patients and/or health professionals, two groups with different objectives.

Facebook

Founded in 2004, Facebook is still the social network par excellence and the one with the most members worldwide, with some 1400 million active users. The way personal profiles on Facebook function is underpinned by reciprocity between users; contacts are known as *friends*, and a member can have a maximum of 5000 friends. Using a personal

Social Network	Description	Photos	Video	Uses in Dermatology	
	Facebook	Platform most used by the general public. Access to personal profiles requires reciprocity.	Yes	Yes	Facebook pages can be used to publish own content or for promotional purposes (marketing). Facilitates groups of individuals with common interests.
	Twitter	Microblogging platform Short messages of 140 characters Not reciprocal	Yes	No	Follow events and conferences (#). Publicize content. Communicate with other professionals. Develop personal brand
	LinkedIn	Professional networking	Yes	No	Contact with other professionals Job search Online <i>curriculum vitae</i>
	Google Plus	Google's social network Not reciprocal. Contacts can be organized into circles	Yes	Yes (using YouTube)	Share clinical sessions (Hangouts) Publicize own content Well positioned on the Google search engine
	YouTube	Exclusively video content Owned by Google	No	Yes	Hangouts (streaming of clinical sessions) Training (videos of surgical interventions)
	Pinterest	Facilitates sharing of visual content (pins) uploaded by the user or from the Internet. Pins are organized into boards	Yes	Yes	Useful for publicizing content and for storing images when preparing presentations
	Instagram	Social network for sharing photos and short videos based on mobile phone app.	Yes	Yes	Useful for awareness and prevention campaigns targeting the younger age group.

Figure 1 Main social networks: characteristics and possible uses in dermatology.

Facebook profile for professional purposes is not recommended. Nor, as a general rule, should physicians accept patients as Facebook friends.¹⁸

A Facebook Page (sometimes called a fan page) is a more appropriate medium for professional purposes. First, because there is no limit to the number of fans (followers) a page can have, but mainly because there is no link between such business pages and the user's personal profile, thereby allowing the user to keep the 2 areas separate (Fig. 2). Finally, the Facebook interface facilitates the creation of groups focused on common interests. These groups, which can be open or closed, can provide a useful platform for discussing professional issues or for continuing education.

Facebook groups on topics such as dermoscopy and dermatopathology already exist.

Twitter

Defined as a microblogging platform, Twitter was created in 2006 and currently has 285 million active users. Unlike Facebook, this media platform does not require reciprocity. Users can follow any account without the approval of its owner, making communication much more asymmetrical. Twitter has its own language, and message length is limited to 140 characters (although tweets can include links and

Figure 2 Facebook page used to publicize the contents of a dermatology blog.

images). Twitter's functions and interface are less intuitive than those of Facebook, making the platform more difficult to use. However, it can also be a more useful tool from a professional point of view when the user follows the accounts most relevant to his or her interests.^{19,20} Applications called list management tools allow us to filter tweets according to our interests, and we can use hashtags (#) to follow events (conferences) and specific topics.^{21,22} From the standpoint of education and dissemination of information, Twitter is a powerful tool and an ideal medium for campaigns designed to provide information or foster prevention.²³

Google Plus

While probably underused despite its more than 500 million users, Google Plus allows us to select which information is shared with each person by grouping contacts into circles. It may be worthwhile to use Google Plus to give greater visibility to a blog or website because its content is generally well

positioned on Google search engines. However, rumors about the imminent disappearance of this platform are growing.

LinkedIn

Launched in 2003, this social network with over 300 million users did not become popular until some years later. Its primary purpose is to allow users to set up a network of professional contacts, but they can also publish information and participate in groups and communities.

YouTube

This media platform allows its more than 1000 million users to share videos. It was acquired by Google in 2006. Although a great deal of the dermatological content on YouTube is of low quality, it is a good choice for sharing clinical sessions

(using Hangouts) or for making available videos of surgical interventions for educational purposes.²⁴

Instagram

This social networking app has over 300 million active users, mainly young people. Since its purpose is to allow members to share photos and short videos, it could provide a useful platform for targeting this segment of the population, particularly with campaigns to raise awareness about the need for photoprotection or the prevention of sexually transmitted infections.²⁵

Pinterest

This is a growing social networking platform with nearly 75 million users, who share and save visual content online. The content (pins) is grouped into boards dealing with different subjects. The journal JAMA Dermatology has a significant presence on Pinterest.²⁶

Ethical and Professional Considerations

More and more dermatologists are seeing social networking not just as a leisure activity but also as a medical tool and a new way to share knowledge, communicate quickly with other professionals, and even as a platform for marketing and advertising. However, the boundary between our professional and personal lives has never been so blurred. Many of us have a presence on social networking platforms, where we present ourselves as doctors, even wearing white coats and carrying a dermoscope. This is a completely new situation, in which even outside of working hours we identify ourselves as dermatologists. There is, however, a crucial difference. Whereas in our consulting rooms we are very clear about the ethical standards demanded by our profession, in these new settings we run the risk of overlooking (usually unintentionally) the basic rules of professional conduct, and not only with regard to confidentiality. As physicians, we are free to use social networks in whatever way we see fit, but when we introduce ourselves as physicians, we must apply the same scientific rigor and ethical standards as we do in our consulting rooms. Therefore, following the lead of other countries, such as New Zealand and the UK,^{27,28} the General Council of Medical Associations of Spain (Organización Médica Colegial) in late 2014 published a style manual adapting its Code of Ethics²⁹ to this new setting³⁰ and a growing number of medical publications are now dealing with these issues.^{5,18,31,32}

The main issues we should take into account are as follows:

- Respecting medical secrecy and confidentiality. Sharing cases can be a useful and educational exercise, but it is essential to maintain patient anonymity and to steer clear of sensationalism and morbid curiosity.
- The visibility afforded by social networks usually means that any user can consult us through such media. It is important to stress that, while there is no obligation to attend to such consultations (it is hard to imagine that

a patient would consult a doctor in this way for a life-threatening condition), it may be appropriate to suggest that the person should consult their dermatologist or other medical professional. We should also be particularly cautious in the case of consultations from other professionals, particularly when these include patient data or images.

- It is important to maintain a professional and appropriate online image at all times, and to avoid expressing opinions that might be perceived as insensitive or transgressing the basic rules of civility.
- We should have a responsible attitude to the medical information we publish on social networking sites and ensure that any such information is understandable, accurate, balanced, and cautious.
- When disagreements arise, we should be respectful of other users. Social networks are an excellent platform for discussion, but we should avoid making statements that discredit or disparage other medical professionals.

Web Tools and Resources for Improving Productivity

Computers have transformed the way we work and the Internet has transformed the way we communicate. However, in today's so-called information age, immediate and unrestricted access to all kinds of content can be overwhelming and make us less efficient. We use the term *infoxication* or information overload to refer to an excess of information that renders the recipient incapable of understanding or assimilating the input.³³

However, today's new technologies also eliminate geographical barriers and facilitate collaboration and teamwork.

The following section presents a few examples of online tools and resources that can help us improve our productivity.

- *Cloud Storage*. Today innumerable platforms offer free data storage, although nonpaying services are limited in terms of capacity. Dropbox, Google Drive, One Drive, Box, and Mega are just some of the most popular cloud storage services. In many cases, these services not only offer storage but have other features that make them ideal platforms for collaborative work. Although extremely useful, these services are not appropriate for storing sensitive information, patient data, or clinical images because the servers where the information is stored are not under our control.
- *Large File Transfer*. Sometimes we need to send files that are too large to be sent as email attachments (such as presentations with images) and we do not want to register with a specific service. In such cases, free services like WeTransfer (up to 2 Gb) and VisualTransfer (up to 5 Gb) can be used facilitate the transfer. With these services, the recipient receives an email with a link where they can download the file.
- *RSS Feedreaders*. These applications or web services collect updates from all the webpages or blogs that interest us into one place. As a result we do not have to visit each URL separately to receive new information. Feedreaders can optimize our time while ensuring that we do not miss

instant data retrieval using geolocation systems, labels, and text searches of the notes.³⁴ Evernote functionality is also complemented by add-on products, such as Penultimate for handwritten notes, Skitch for creating sketches and graphics, and many others.

- *Hangouts*. This is a Google Plus service that allows users to record videoconferences and broadcast them publicly and privately. The videos are recorded on the YouTube channel. Hangouts also facilitates desktop sharing, making it possible to broadcast a simple clinical session (with the corresponding presentation), which can be followed live or viewed later by anyone who has the link.
- *Bibliographic Reference Management Tools*. Today, reference management software is an essential tool for all researchers, and a great aid to the compilation of bibliographic references, which can be organized into libraries accessible from any device. The main advantage of these platforms is the automatic creation of the reference section when we write a manuscript, as these apps prevent the duplication of references and problems with the order of citations. The most popular tools of this kind are Zotero, Mendeley, RefWorks, and EndNote (the last two are paid apps).^{35,36}

Conclusions

Whether we like it or not, we are facing a new situation in which social networks afford us new ways of communicating with our patients in a much more egalitarian and less paternalistic way. This new situation is ideal for providing information and promoting health outside the walls of the dermatology office, and any dermatologist can take advantage of the Internet to strengthen his or her online reputation and open up new opportunities. At the same time, we must also be aware of the risks inherent in the use of social networks, apply the Code of Medical Conduct, and be just as cautious online as we would be in our daily practice.

Furthermore, the Internet can be a source of many tools, most of them free, that can help us to improve our productivity.

Is not a question of adapting ourselves to new technologies; what we need to do is adapt new technologies to the way we work in order to optimize our time and resources.

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