



## ORIGINALS

# Use of Web 2.0 tools by hospital pharmacists

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### Abstract

**Objective:** Web 2.0 tools are transforming the pathways health professionals use to communicate among themselves and with their patients so this situation forces a change of mind to implement them. The aim of our study is to assess the state of knowledge of the main Web 2.0 applications and how are used in a sample of hospital pharmacists.

**Method:** The study was carried out through an anonymous survey to all members of the Spanish Society of Hospital Pharmacy (SEFH) by means of a questionnaire sent by the Google Drive® application. After the 3-month study period was completed, collected data were compiled and then analyzed using SPSS v15.0.

**Results:** The response rate was 7.3%, being 70.5% female and 76.3% specialists. The majority of respondents (54.2%) were aged 20 to 35. Pubmed was the main way of accessing published articles. 65.2% of pharmacists knew the term "Web 2.0". 45.3% pharmacists were Twitter users and over 58.9% mainly for professional purposes. Most pharmacists believed that Twitter was a good tool to interact with professionals and patients. 78.7% do not use an aggregator, but when used, Google Reader was the most common.

**Conclusion:** Although Web 2.0 applications are gaining mainstream popularity some health professionals may resist using them. In fact, more than a half of surveyed pharmacists referred a lack of knowledge about Web 2.0 tools. It would be positive for pharmacists to use them properly during their professional practice to get the best out of them.

### Uso de las herramientas de la Web 2.0 por parte de los farmacéuticos hospitalarios

#### Resumen

**Objetivo:** Las herramientas de la Web 2.0 están transformando los canales que los profesionales sanitarios emplean para comunicarse entre sí y con los pacientes por lo que esta situación obliga a un cambio de mentalidad para implementarlas. El objetivo de este estudio fue evaluar el grado de conocimiento y aplicación de las principales herramientas Web 2.0 por parte de farmacéuticos hospitalarios.

**Método:** El estudio se llevó a cabo mediante una encuesta anónima dirigida a todos los miembros de la Sociedad Española de Farmacia Hospitalaria (SEFH) a través de la aplicación Google Drive®. Después de completarse los 3 meses del período de estudio, los datos recogidos se analizaron usando SPSS v15.0.

**Resultados:** La tasa de respuesta fue del 7,3%, siendo el 70,5% mujeres y el 76,3 % especialistas. La mayoría de los que respondieron (54,2%) estaban en el rango de edad de 20 a 35 años. Pubmed fue el medio principal de acceder a los artículos publicados. El 65,2% de los farmacéuticos conocía el término "Web 2.0". El 45,3% eran usuarios de Twitter, de los cuales un 58,9% principalmente para uso profesional. La mayoría creía que Twitter era una buena herramienta para interactuar entre los profesionales y los pacientes. El 78,7% no usaba un agregador, pero cuando lo hacían, Google Reader era el más habitual.

**Conclusión:** Aunque las aplicaciones de la Web 2.0 están ganando popularidad, algunos profesionales sanitarios se resisten a utilizarlas. De hecho, más de la mitad de los farmacéuticos entrevistados manifestaba un nulo conocimiento de las herramientas de la Web 2.0. Sería positivo que los farmacéuticos las usasen adecuadamente durante su práctica profesional para sacarles el máximo partido.

#### KEYWORDS

Web 2.0; Pharmacist; Internet

#### PALABRAS CLAVE

Web 2.0; Farmacéutico; Internet

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## Introduction

In the last decade important changes have been happening throughout the Internet. The population is getting more interested and looking for information by surfing the web, so technology has to adapt to modern times. As more people gain access to the Internet, patients seeking health-care information for themselves or their family members will likely increase. The Internet has become one of the most important places where patients<sup>1</sup> and professionals<sup>2</sup> resolve their information needs about health and medicine. Related to that, a recent study published in 2013 stated that almost all patients (99.3%) primarily use social media for health related reasons, with Facebook and Twitter being the first and second most common, respectively.<sup>3</sup> With respect to professionals, in 2008, the European Commission published a survey stating that approximately 66.0% of general practitioners use the Internet during consultations.<sup>4</sup> As a result of technological advances, a new way of accessing and sharing information called «Web 2.0» has emerged across the word wild web (www). This term, sometimes a little bit undefined, refers to a number of evolved applications, open and social in nature, that allow users to share information. It hasn't yet been established what exactly the term involves, but the general concept is a new set of online applications embracing openness among users, other applications, social connections, and collective intelligence.<sup>5,6</sup> Due to users capacity to create new content, the design is focused on them. In this way, as time goes on, virtual communities are emerging. Through Web 2.0 tools, people obtain information and contribute to online content in an interactive networked environment that gets richer as more people use it. The main difference between Web 2.0 («social web») and Web 1.0 («static web») is the bidirectionality, contents can be more easily generated and published by users. As a result of their capacity to create and distribute information, these Web 2.0 applications are usually used to generate and spread knowledge. Web 2.0 technology encourages a more human approach to interactivity on the web, better support group interaction and fosters a greater sense of community in a potentially social environment.<sup>7</sup>

Web 2.0 integrates really simple syndication (RSS) technology. RSS assists Internet users in keeping abreast of changes in websites that they are interested in. In order to take advantage of RSS feeds (special type of file) an aggregator or feed reader is required. The feed reader is an application that notifies users of new syndicated contents of the desired web pages to avoid checking everyday if new contents have been added.<sup>5,7,8</sup> There are several kinds of feed reader. Netvibes, is an online aggregator that allows users to create a virtual dashboard including all feeds you are interested in.

With this technology «revolution», Web 2.0 and social media are transforming the pathways health professionals use to communicate among themselves and with their patients. Our relationships are becoming stronger and different than they used to be with static websites. The use of

these tools by physicians is increasing, in fact, data suggest that almost 90.0% of physicians use Web 2.0 tools in their medical practice.<sup>9</sup> Among those who have already taken their first steps in the sphere of Web 2.0 are plastic surgeons<sup>10,11</sup> and nephrologists.<sup>12</sup> All the changes that are emerging in technology have modified the way of sharing information. This situation generates the need of implementing new technologies in our daily work. Related to that, the American Society of Health Pharmacists (ASHP) encourages pharmacy professionals working in hospitals and health systems to adapt to new technologies and to do it in a professional, responsible, and respectful manner.<sup>13</sup>

There are limited published data regarding the application of Web 2.0 applications within professional pharmacy activities, above all hospital pharmacists. For this reason, we decided to carry out this work, in order to get to know where hospital pharmacists are in this field. The aim of our study is to assess the state of knowledge of the main Web 2.0 applications and how are used in a sample of hospital pharmacists.

## Method

The study was carried out through an anonymous survey in March of 2013. The survey was conducted online and participants were recruited through email lists. The surveyed population included all pharmacist members of the Spanish Society of Hospital Pharmacy (SEFH). SEFH is a scientific association dedicated to distribute knowledge about hospital pharmacy. Up to now it counts about 2.800 hospital pharmacists as active members.

The questionnaire was sent through an application called Google Drive®. Google Drive® is a freeware web-based office suite that allows users to create and edit documents online while collaborating in real-time with other users. An electronic request was sent by mail to every SEFH member. The invitation described the project purpose and also provided the link to access the survey. To ensure an adequate response rate, one reminder email was sent on April 2013. The survey was closed on June 2013.

The survey consisted of twelve questions designed to assess the state of knowledge and use of the Web 2.0 applications. Participants were queried about:

- Demographic data: sex and age. Three age categories were present in the study: age 20 to 35, 36 to 50 and 51 to 65
- Professional category: hospital pharmacy specialist or resident
- Habitual means of access to published articles in journals databases: electronic library of the institution, Pubmed, Google Scholar, request to the librarian, other methods
- Knowledge about Web 2.0 and tools included
- Use of Twitter and main purpose of use
- Belief in Twitter as a good tool to share information among professionals and among professionals and patients

- Use of RSS technology and a specific question of Netvibes (online feed reader)

After the 3-month study period was completed, collected data were compiled and then analyzed through SPSS v 15.0. Due to nature of variables, qualitative, a chi-square test ( $\chi^2$ ) was applied.

## Results

A total of 203 survey recipients completed the survey, resulting in a 7.3% response rate. 70.5% of surveyed people were female and 76.3% hospital pharmacist specialists. The majority of respondents (54.2%) were aged 20 to 35, 33.8% were 36 to 50 and the rest 51 to 65 years.

The obtained results are shown in table 1 and table 2.

## Discussion

Social media have changed the way in which people interact and develop personal and professional relationships. For health professionals, the question of embracing social media depends on how we ought to behave with these tools. It seems that uptake of these advances is still relatively low among hospital pharmacists. To carry on the study, we decided to use Google Drive® due to the feasibility of sending the online survey to all SEFH members. In this study, a 7.3% rate of response has been obtained which does not agree with other published results. 14.5% of pediatricians returned an online questionnaire to assess use of Internet.<sup>14</sup> 20.8% of plastic surgeons answered a survey the objective of which was to examine use of social media.<sup>11</sup> In a study of pharmacists to define usage patterns of Facebook and Twitter and assess perceptions regarding use of social media within professional practice, the response rate was 49.2%.<sup>15</sup> This variability might be due to the study sample in each study ( $n= 2.800, 1335, 1000, 155$ , respectively). In the last cited study the reason could be the inclusion of several subgroups of pharmacists (all pharmacists registered as advanced pharmacy practice experience preceptors with Purdue University College of Pharmacy). Whereas, our study is focused on hospital

pharmacists. We compared our results with other studies including online surveys to physicians because we did not find any more related to pharmacists.

In line with other works, Pubmed is the most frequently consulted database for seeking published articles.<sup>14</sup> A recent published study showed that almost 60.0% of physicians use medical research databases to obtain medical information online.<sup>2</sup> With respect to knowledge, In our study, it has been seen that more than a half of surveyed hospital pharmacists were aware of the meaning of Web 2.0 as well as the included tools. This last variable was linked to age such that younger pharmacists know more about this topic than older ones but there were no significant statistical differences. Our finding is in concordance with the 89.0% of surveyed junior physicians that used at least one Web 2.0 tool in their medical practice.<sup>16</sup> Moreover, younger pediatricians are more likely to be influenced in their clinical decisions by information found on the web.<sup>14</sup> Surprisingly, hospital pharmacy specialists master this topic compared with pharmacist residents. It may be due to most pharmacist specialists being young.

Web 2.0 applications can be grouped into various categories according to functionality. Blogs are tools that allow us to create and share knowledge continuously, providing also a mechanism for reader feedback. They are also being used as an online source for health and medical information. A published study in 2010 that assessed the characteristics of pharmacists blogs showed that the vast majority (70.5%, 31 of 44) of them included some type of discussion of pharmacologic therapies.<sup>17</sup> Microblogs, such as Twitter, allow much shorter versions of posts and are limited to 140 characters. Less than 50.0% of surveyed pharmacists stated they had a Twitter account. Previous studies showed that 60.0% pharmacists<sup>15</sup> and 96.0% plastic surgeons<sup>11</sup> asserted they had an account on Facebook. About Twitter, only 9.0% pharmacists<sup>15</sup> and approximately 47.0% plastic surgeons<sup>11</sup> had an account. In a recent survey of hospital pharmacists, about 43.0% used Web 2.0 applications to interact with other professionals, Facebook and blogs being the most used.<sup>18</sup> Furthermore, the evidence of the take up of these tools by pharmacists is limited but is increasing as times goes by. In our study, more than a half of the surveyed hospital pharmacists who referred using Twitter mainly did it in a professional way. Our results are not in concordance with other published results. Recent studies show that pharmacists have used social media primarily for personal purposes.<sup>19</sup> A study published in 2011 showed that over 90.0% of pharmacist respondents indicated they used Facebook primarily for social purposes. Additionally, 29.0% of respondents were not interested in using Facebook or Twitter for any professional activity.<sup>15</sup> In the Spanish hospital pharmacy setting, several activities have been developed not only personal but also professional. Blogs have been used for giving professional opinion or even to inform patients.<sup>20</sup> Nowadays, the number of pharmacy organizations and hospitals that are creating

**Table 1.** Way in which most frequently hospital pharmacists looking for published articles

	Number of pharmacists (n)	Percentage (%)
Pubmed	110	54.2
Electronic library of institution	66	32.5
Google Scholar	17	8.4
Others	6	3.0
No answer	3	1.5
Library	1	0.4
Total	203	100

**Table 2.** *Obtained results through the online survey*

Percentage of users with positive answers (%) (n = 203)				Statistical analysis between variables (p)	
Knowledge about Web 2.0 and included tools	65.2			Based on age	p = 0.829
				Professional category	p = 0.022
Have an account on Twitter and main purpose of use	45.3	20 to 35	64.4	Based on age	p = 0.023
		36 to 50	26.7		
		51 to 65	8.9		
Main purpose of use by Twitter users	Professional		58.9		
	Personal		41.1		
Belief in Twitter as a good tool to share information among	Professionals		50.3		
	Professionals and patients		71.8		
Use of a feed reader	21.3	Google Reader	46.6		
		Netvibes	36.7		
		Others	16.7		
Knowledge about Netvibes	33.5				

organizational Facebook and Twitter sites to reach out to pharmacy and other health professionals is rising. Hospital pharmacists are «managers» of knowledge and have to be updated on a wide range of topics to give answers to questions from practitioner and patients. Hence, Twitter accounts to distribute information related to drugs and relevant published articles have been implemented in several drug information centers.<sup>21</sup> Nevertheless, the use of social media tools by pharmacists for professional development will likely continue to evolve. 36.0% of surveyed hospital pharmacists knew the term «Health 2.0».<sup>18</sup>

If we compare our results with other studies focused in other health professionals we do not see any concordance. In 2010, 50.0% of surveyed physicians used social media for personal reasons.<sup>15</sup> As indicated in a study published in 2011 focused on social media use in plastic surgeons only 28.2% use these tools with a professional objective in mind.<sup>11</sup> A study carried out in 2013 whose objective was to investigate use of social media declared 59.3% of health professionals use social media tools with Facebook and Youtube being the most common, and only 26.8% for health related reasons.<sup>3</sup> Physicians use social media mainly for personal purposes, with a growing minority using it to directly interact with patients or in other ways that augment clinical care.<sup>22</sup>

These discrepancies are possibly due to the period in which articles were published. As we can see, use of social media tools is increasing<sup>23</sup> so in 2013 results could be different. Another possible reason is the sample surveyed for

the study, because not all professionals have the same needs and purposes of use social media on daily work. As factors that may contribute to avoid using these tools with professional purposes could highlight the lack of familiarity and concerns about the privacy and security of health related information. In fact, a recent study shows that plastics surgeons referred not using social media to maintain a sense of professionalism, preserve patient confidentiality and avoid becoming too accessible.<sup>10</sup> Moreover, 72.0% of physicians revealed as reasons against using the Web 2.0 the limits to information found such as quality and information overload. In the same study, 93.0% of physicians cited the ease of use as the main motivation for using the internet for finding and sharing information.<sup>16</sup>

This technological environment forces us to change our mind and introduce in a new way of connecting people and spreading new information through them. 3.0% of pharmacists do not recommend any webpage to patients, in 30.0% of cases due to the excess of information which was even considered potentially harmful.<sup>20</sup>

With respect to the use of RSS technology, no published data were found to compare with our study results. We cited Google Reader and Netvibes as the most used aggregators. However it is surprising that almost 80.0% of surveyed pharmacists did not use this tool.

If public health is considered, Web 2.0 is challenging traditional health promotion models and prompting the advancement of innovative health promotion and communication methods with rigorous impact assessment. Social

media has been heralded as a powerful tool for interactive health promotion. The interactivity of Web 2.0 increases audience participation, allowing them to construct health promotion messages and interventions.<sup>24</sup> As our results showed, 69.7% of surveyed pharmacists didn't consider Twitter a good tool to promote information between professionals and patients. Indeed Twitter intervention promoted a multivitaminic habit among college-aged females.<sup>25</sup> In general Web 2.0 applications and general Internet access have augmented the availability and accessibility of health related information. Social media sites such as «patients like me» ([www.patientslikeme.com](http://www.patientslikeme.com)) or Facebook<sup>26</sup> allow individuals to communicate freely and engage in real time information exchanges with others experiencing the same diseases. Healthcare practitioners connect with individual patients through social media applications such as Facebook. In this way, accepting a Facebook friend request the practitioner could learn more about the patient's lifestyle and other factors that may affect his/her health.<sup>27</sup> As possible limitations of the study, it would have been interesting to include in the work the assesment of use of other Web 2.0 applications so as to compare with the published results. Another possible limitation is the small number of published articles related to use of web 2.0 tools by hospital pharmacists, that's why we have compared results with other health samples.

## Conclusion

More than a half of surveyed pharmacists referred to the absence of knowledge about Web 2.0 tools not being related to age. Although the application of these tools is gaining mainstream popularity, some health professionals may resist using them. In fact approximately 60.0% of surveyed pharmacists use Twitter accounts for professional purposes. With the expanding presence of healthcare institutions, hospital organizations and pharmaceutical companies, using social media tools as a way of communication, it would be a positive thing that pharmacists use them during their professional practice. Much still remains to be done in this field so it is necessary to encourage professionals to use these tools in a beneficial manner. Only in this way can we get the best out of them.

## Conflicto de intereses

Los autores declaran no presentar conflictos de intereses.

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