

Original Paper

Use of Social Media by Western European Hospitals: Longitudinal Study

Tom H Van de Belt¹, MSc; Sivera AA Berben², RN, PhD; Melvin Samsom³, MD, PhD; Lucien J LPG Engelen^{1,2}; Lisette Schoonhoven^{2,4,5}, RN, PhD

¹Radboud REshape and Innovation Centre, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

²Emergency Healthcare Network, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

³Executive Board, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

⁴Scientific Institute for Quality of Healthcare, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

⁵Faculty of Health Sciences, University of Southampton, Southampton, United Kingdom

Corresponding Author:

Tom H Van de Belt, MSc

Radboud REshape and Innovation Centre

Radboud University Nijmegen Medical Centre

1st Floor

St Annastraat 299

Nijmegen, 6512 GT

Netherlands

Phone: 31 24 7440083

Fax: 31 24 7440083

Email: t.vandebelt@reshape.umcn.nl

Abstract

Background: Patients increasingly use social media to communicate. Their stories could support quality improvements in participatory health care and could support patient-centered care. Active use of social media by health care institutions could also speed up communication and information provision to patients and their families, thus increasing quality even more. Hospitals seem to be becoming aware of the benefits social media could offer. Data from the United States show that hospitals increasingly use social media, but it is unknown whether and how Western European hospitals use social media.

Objective: To identify to what extent Western European hospitals use social media.

Methods: In this longitudinal study, we explored the use of social media by hospitals in 12 Western European countries through an Internet search. We collected data for each country during the following three time periods: April to August 2009, August to December 2010, and April to July 2011.

Results: We included 873 hospitals from 12 Western European countries, of which 732 were general hospitals and 141 were university hospitals. The number of included hospitals per country ranged from 6 in Luxembourg to 347 in Germany. We found hospitals using social media in all countries. The use of social media increased significantly over time, especially for YouTube (n = 19, 2% to n = 172, 19.7%), LinkedIn (n = 179, 20.5% to n = 278, 31.8%), and Facebook (n = 85, 10% to n = 585, 67.0%). Differences in social media usage between the included countries were significant.

Conclusions: Social media awareness in Western European hospitals is growing, as well as its use. Social media usage differs significantly between countries. Except for the Netherlands and the United Kingdom, the group of hospitals that is using social media remains small. Usage of LinkedIn for recruitment shows the awareness of the potential of social media. Future research is needed to investigate how social media lead to improved health care.

(*J Med Internet Res* 2012;14(3):e61) doi: [10.2196/jmir.1992](https://doi.org/10.2196/jmir.1992)

KEYWORDS

Social media; health 2.0; medicine 2.0; eHealth; participatory health care; patient empowerment; Web 2.0; patient-centered care

Introduction

Social media are defined as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and they allow the creation and exchange of user-generated content [1]. Social media allow individuals to participate in online social networks and turn communication into interactive dialogue, using highly accessible and scalable communication applications [2]. Of all young Internet users (18–24 years of age) in the European Union, 80% use social media [3]. In the Netherlands, this percentage is even higher, with 91% using social media [3].

Facebook and Twitter are well-known examples of social media, which have become mainstream social technologies [4]. Facebook has over 800 million active users [5]. For comparison, the United States has 310 million inhabitants [6]. One of the success factors of social media is that many are free of charge. Social media play an increasingly important role in our society, and they are being used for a large variety of purposes, varying from finding a job or an employee to finding a partner or planning a trip. Also, a growing number of people are using mobile devices such as smartphones and tablet computers, which allow them to use social media from any place, at any time [1].

Social media empower users by allowing them to communicate effectively and have access to all kinds of information. Not only individuals use social media; companies use them too. It helps them to listen better to customers to hear what they want. Barnes and Mattson studied use of blogs and Twitter by the 500 largest corporations in the United States [7]. They found a steady adoption of blogs and an explosive growth of Twitter. As these companies have great influence on the commercial sector, it is expected that social media will become more important in the business world.

In health care, patients increasingly use social media to communicate and share information. This is one of the fundamentals of what is described as Health 2.0 or Medicine 2.0 [8]. Patients share their stories and information on social media, which are rapidly indexed by search engines like Google and can be found easily. Seeing that many patients start by performing a Google search, it seems relevant for hospital organizations to be active on social media. For example, 64% of all respondents of an online questionnaire among patients in the United States start by performing a search to analyze their condition [9]. Another reason why hospital organizations should embrace social media is that it may contribute to quality improvements in health care. Active use of social media not only speeds up communication and improves information provision for patients; it allows caregivers to engage patients in the delivery of care, and for caregivers and patients to make decisions collaboratively and improve their relationship [10]. In this way, using social media improves patient-centered care [11].

There are also beneficial aspects for the hospital organization itself. Several studies reported that social media can improve communication among staff, facilitate networking, attract visitors to the hospital's website, build the hospital's brand, and be used for recruitment for research projects [12,13].

A descriptive study performed in the United Kingdom found that 40% of the 152 health care organizations they studied used one or more types of social media, but that there was little interaction with online visitors (eg, patients) [14]. Also, many organizations were simply “seeding” information. In the United States, the use of social media by hospitals has been noted. Bennett documented that 674 hospitals had a Twitter account and 448 were on YouTube [15]. Considering that the United States has a total of 5000 hospitals, around 15.7% of all hospitals in the United States are on Twitter, 20.3% are on Facebook, and 10.9% are on YouTube [16]. However, it is unknown whether and how Western European hospitals use social media. Therefore, the target of this study was to identify the extent to which European hospitals use social media.

Methods

In this longitudinal study, we explored the use of social media by hospitals in 12 Western European countries through an Internet search.

Inclusion Criteria

We included the following Western European countries: the Netherlands, Belgium, Luxembourg, Germany, Austria, Switzerland, the United Kingdom, Ireland, Norway, Sweden, Finland, and Denmark. To retrieve a comprehensive list of hospitals for each country, we searched for lists of hospitals with detailed information on Wikipedia and the Hospitals Worldwide website [17,18]. Second, we contacted colleagues from the included countries and asked for official lists of hospitals. Third, we consulted country-specific websites with detailed information. Fourth and last, we used Google and each hospital's website to find additional information such as contact information or the number of beds. We included only hospitals with a website and at least 200 beds. If hospitals were part of a larger hospital organization with a central website, we explored the central website only and counted these hospitals as 1 hospital.

Variables

For each hospital we recorded the following characteristics: official name, address, country, province or state, email, number of beds, and number of hospitals included in the organization.

Since no scientific evidence was available on the popularity of different social media, we used information from websites and infographics to decide which social media were most popular and needed to be included in the study [19,20]. We gathered data about the following social media: YouTube, Twitter, Facebook, LinkedIn, and blogs (weblogs). We defined blog by the presence of the following characteristics: reverse chronological order of publication, regular updates (>1 per month), and the possibility to post comments. Facebook has different types of pages. In this study, we distinguished between company pages and group pages. For each medium, we searched for relevant data on use such as the number of friends or followers, the number of videos or tweets, and the date of registration. For each medium, we recorded whether the media could be found via the hospital's website.

Data Collection

Between April 2009 and July 2011, we collected data for each country during the following three time periods: T1 (April to August 2009), T2 (August to December 2010), and T3 (April to July 2011). YouTube accounts, Twitter accounts, and blogs were measured at T1, T2, and T3. For Facebook and LinkedIn, we performed two measurements, at T2 and T3.

Two researchers collected the data. A predefined search protocol was used, containing a 3-step search strategy. First, we visited

the hospital's website and searched for social media. We also used the website's search function (if available). Second, we searched for the hospital's name within the different types of social media such as YouTube. Third and last, we used Google for more specific search queries, such as the hospital's name and *Twitter*. [Table 1](#) presents the search protocol. Before the official start, the two researchers involved in the search discussed the results for 20 hospitals. Since all variables in this study are unambiguous (eg, number of beds, Twitter account: "yes" or "no"), no relevant differences or issues appeared.

Table 1. Search protocol for data collection.

| Step | Protocol |
|------|--|
| 1 | Select hospital from list. |
| 2 | Visit official website and add contact information to table. Find using standard search tool (ie, Google). |
| 3 | Record number of beds (total). Include hospitals with >200 beds. |
| 4 | If included, proceed to next steps. |
| 5 | Add general information. |
| 6 | Look for different types of social media on hospital's website and add to table. |
| 7 | Use search option on hospital's website and search the terms <i>YouTube</i> , <i>movie</i> , <i>film</i> , <i>Twitter</i> , <i>Facebook</i> , <i>blog</i> , <i>LinkedIn</i> , and <i>weblog</i> . Add all new social media to the table. |
| 8 | Visit <i>Twitter.com</i> , <i>Youtube.com</i> , <i>Facebook.com</i> , and <i>LinkedIn.com</i> and search on hospital's official name. Add all new social media to the table. |
| 9 | Use specific search queries in Google, eg, the hospital's name AND <i>Facebook</i> . Add all new social media to the table. |
| 10 | Add other relevant information for all types of social media, eg, number of friends and followers, date of registration. |

Data Validation

We contacted all organizations with the request to validate the results for their hospital. We sent emails to each hospital's general email address as stated on their official website, most likely on the Contact page. The email contained a description of this study by the Radboud REshape & Innovation Center, University Nijmegen Medical Centre, and a unique link to an online database. Receivers were able to make changes or add information or comments. We sent 873 email requests. Of these, 45 messages (5%) were returned as undeliverable, and 44 hospitals validated the results (5%).

Analysis

We used descriptive statistics to describe the basic features of our data and the use of social media by the included hospitals. We calculated percentages, means, and standard deviations for normally distributed data, and medians and interquartile ranges

for nonnormally distributed data. Cochran Q test was used to analyze the differences in social media usage between the three measurements within individual countries. In case of significant differences, we used the McNemar test for post hoc testing. Furthermore, we analyzed the differences in social media usage between countries at T3 by using the chi-square test. Finally, we used the Wilcoxon rank test to analyze the nonnormally distributed data for number of videos, views, and followers between T2 and T3 within the included countries.

Results

In total we looked at 873 hospitals from 12 Western European countries: 732 general hospitals and 141 university hospitals. The number of included hospitals per country ranged from 6 in Luxembourg to 347 in Germany. The mean number of beds per hospital was 544. [Table 2](#) presents general characteristics of the hospitals.

Table 2. Hospitals included in the analysis and their general details.

| Country ^a | Number of hospitals | | | Number of beds, mean (SD) |
|----------------------|---------------------|-------------------|----------------------|---------------------------|
| | Total | General hospitals | University hospitals | |
| NL | 88 | 80 | 8 | 549 (278) |
| BE | 91 | 79 | 12 | 450 (261) |
| LU | 6 | 5 | 1 | 363 (139) |
| DE | 347 | 314 | 33 | 533 (445) |
| AT | 25 | 19 | 6 | 775 (587) |
| CH | 41 | 39 | 2 | 389 (232) |
| UK | 175 | 123 | 52 | 624 (282) |
| IR | 28 | 21 | 7 | 392 (192) |
| NO | 17 | 11 | 6 | 480 (238) |
| SE | 22 | 17 | 5 | 698 (511) |
| FI | 9 | 7 | 2 | 697 (544) |
| DK | 24 | 17 | 7 | 551 (286) |
| Total | 873 | 732 | 141 | 544 (376) |

^a NL = the Netherlands, BE = Belgium, LU = Luxembourg, DE = Germany, AT = Austria, CH = Switzerland, UK = United Kingdom, IR = Ireland, NO = Norway, SE = Sweden, FI = Finland, DK = Denmark.

We found hospitals using social media in all countries. The use of social media increased over time, and we found significant differences between countries. Table 3, Table 4, and Table 5 show the results by country.

Table 3. Social media usage (T1–T3)^a in 12 Western European countries (YouTube and Twitter).

| Country ^b | YouTube, n (%) | | | P value | | Twitter, n (%) | | | P value | |
|----------------------|----------------|----------|-------------|-----------------------------|-----------------------|----------------|----------|-------------|-----------------------------|-----------------------|
| | T1 | T2 | T3 | T1 vs T2 vs T3 ^c | T1 vs T3 ^d | T1 | T2 | T3 | T1 vs T2 vs T3 ^c | T1 vs T3 ^d |
| NL (n = 88) | 9 (10%) | 23 (26%) | 33 (38%) | <.001 | <.001 | 4 (5%) | 27 (31%) | 49 (56%) | <.001 | <.001 |
| BE (n = 91) | 1 (1%) | 4 (4%) | 5 (5%) | .04 | .14 | 0 | 2 (2%) | 6 (7%) | .009 | .03 |
| LU (n = 6) | 0.0 | 1 (17%) | 1 (17%) | .37 | 1 | 0 | 0 | 0 | ND ^e | ND |
| DE (n = 347) | 3 (1%) | 20 (6%) | 52 (15%) | <.001 | <.000 | 2 (1%) | 9 (3%) | 23 (7%) | <.001 | <.001 |
| AT (n = 25) | 0 | 3 (12%) | 3 (12%) | .05 | .25 | 0 | 0 | 0 | ND | ND |
| CH (n = 41) | 0 | 2 (5%) | 5 (12%) | .02 | .06 | 0 | 1 (2%) | 1 (2%) | .37 | 1 |
| UK (n = 175) | 6 (3%) | 37 (21%) | 62 (35%) | <.001 | <.001 | 4 (2%) | 42 (24%) | 68 (39%) | <.001 | <.001 |
| IR (n = 28) | 0 | 0 | 0 | ND | ND | 0 | 0 | 1 (4%) | .37 | 1 |
| NO (n = 17) | 0.0 | 2 (12%) | 3 (18%) | .1 | 1 | 0 | 2 (12%) | 8 (47%) | .002 | .008 |
| SE (n = 22) | 0 | 5 (23%) | 5 (23%) | .007 | 1 | 0 | 2 (9%) | 2 (9%) | .14 | .5 |
| FI (n = 9) | 0 | 0 | 0 | ND | ND | 0 | 0 | 0 | ND | ND |
| DK (n = 24) | 0.0 | 2 (8%) | 3 (13%) | .1 | .25 | 0 | 0 | 0 | ND | ND |
| All (n = 873) | 19 (2%) | 99 (11%) | 172 (19.7%) | <.001 | <.001 | 10 (1%) | 85 (10%) | 158 (18.1%) | <.001 | <.001 |

^a T1 = April to August 2009, T2 = August to December 2010, T3 = April to July 2011.

^b NL = the Netherlands, BE = Belgium, LU = Luxembourg, DE = Germany, AT = Austria, CH = Switzerland, UK = United Kingdom, IR = Ireland, NO = Norway, SE = Sweden, FI = Finland, DK = Denmark.

^c Cochran Q test (df = 2).

^d McNemar test (df = 2).

^e No data.

Table 4. Social media usage (T1–T3)^a in 12 Western European countries (Facebook, blogs, and LinkedIn).

| Country ^b | Facebook, n (%) | | | P value T2 vs T3 ^c | Blog, n (%) | | | P value | | LinkedIn, n (%) | | | P value T2 vs T3 ^c |
|----------------------|-----------------|----------|-------------|-------------------------------------|-------------|---------|---------|-----------------------------------|--------------------------|-----------------|-------------|-------------|-------------------------------------|
| | T1 | T2 | T3 | | T1 | T2 | T3 | T1 vs T2 vs T3 ^d | T1 vs T3 ^c | T1 | T2 | T3 | |
| NL (n = 88) | ND ^e | 0 | 13 (15%) | <.001 | 2 (2%) | 5 (6%) | 4 (5%) | .1 | .5 | ND | 48 (55%) | 71 (81%) | <.001 |
| BE (n = 91) | ND | 20 (22%) | 62 (68%) | <.001 | 2 (2%) | 2 (2%) | 2 (2%) | 1 | 1 | ND | 20 (22%) | 41 (45%) | <.001 |
| LU (n = 6) | ND | 0 | 3 (50%) | .25 | 0 | 0 | 0 | ND | ND | ND | 0 | 2 (33%) | .5 |
| DE (n = 347) | ND | 26 (8%) | 232 (66.9%) | <.001 | 0 | 0 | 1 (1%) | .37 | 1 | ND | 6 (2%) | 10 (3%) | .22 |
| AT (n = 25) | ND | 1 (4%) | 21 (84%) | <.001 | 0 | 0 | 0 | ND | ND | ND | 1 (4%) | 3 (12%) | .5 |
| CH (n = 41) | ND | 4 (10%) | 15 (37%) | .001 | 0 | 0 | 0 | ND | ND | ND | 5 (12%) | 9 (22%) | .13 |
| UK (n = 175) | ND | 31 (18%) | 163 (93.1%) | <.001 | 0 | 10 (6%) | 12 (7%) | <.001 | <.001 | ND | 71 (41%) | 97 (55%) | <.001 |
| IR (n = 28) | ND | 0 | 23 (82%) | <.001 | 0 | 0 | 0 | ND | ND | ND | 0 | 3 (11%) | .25 |
| NO (n = 17) | ND | 2 (12%) | 15 (88%) | <.001 | 0 | 0 | 1 (6%) | .37 | 1 | ND | 8 (47%) | 13 (76%) | .06 |
| SE (n = 22) | ND | 0 | 10 (45%) | <.001 | 3 (14%) | 3 (14%) | 2 (9%) | .37 | 1 | ND | 15 (68%) | 17 (77%) | .5 |
| FI (n = 9) | ND | 0.0 | 7 (78%) | .02 | 0 | 0 | 0 | ND | ND | ND | 0 | 1 (11%) | 1 |
| DK (n = 24) | ND | 1 (4%) | 21 (88%) | <.001 | 0 | 0 | 1 (4%) | .37 | 1 | ND | 5 (21%) | 11 (46%) | .03 |
| All (n = 873) | ND | 85 (10%) | 585 (67.0%) | <.001 | 7 (1%) | 20 (2%) | 23 (3%) | <.001 | <.001 | ND | 179 (20.5%) | 278 (31.8%) | <.001 |

^a T1 = April to August 2009, T2 = August to December 2010, T3 = April to July 2011.

^b NL = the Netherlands, BE = Belgium, LU = Luxembourg, DE = Germany, AT = Austria, CH = Switzerland, UK = United Kingdom, IR = Ireland, NO = Norway, SE = Sweden, FI = Finland, DK = Denmark.

^c McNemar test (df = 2).

^d Cochran Q test (df = 2).

^e No data.

Table 5. YouTube videos, views, and Twitter followers at T2 and T3^a.

| Country ^b | YouTube videos per account, median (IQR) ^c | | P value T2 vs T3 ^d | YouTube views per account, median (IQR) | | P value T2 vs T3 ^d | Twitter followers per account, median (IQR) | | P value T2 vs T3 ^d |
|----------------------|---|------------|----------------------------------|---|------------------------|----------------------------------|---|----------------|----------------------------------|
| | T2 | T3 | | T2 | T3 | | T2 | T3 | |
| NL (n = 88) | 5 (2–20) | 9 (5–26) | .03 | 839 (221–1721) | 4828 (976–12022) | <.001 | 119 (48–235) | 336 (150–748) | <.001 |
| BE (n = 91) | 3 (2–3) | 7 (3–9) | .18 | 241 (145–241) | 6648 (3332–13241) | .04 | 175 | 127 (41–232) | ND ^e |
| LU (n = 6) | 5 (a) | 4 (a) | ND | 141 | 244 | ND | 0 | 0 | ND |
| DE (n = 347) | 2 (2–17) | 6 (3–19) | .01 | 1809 (737–27,823) | 1920 (382–11366) | .001 | 51 (27–76) | 90 (30–309) | .18 |
| AT (n = 25) | 20 (10–22) | 32 (18–58) | .11 | 10,930 (5465–12,755) | 26,251 (19,855–29,692) | .18 | 0 | 0 | ND |
| CH (n = 41) | 2 (2–3) | 6 (3–16) | .1 | 3 (a) | 3717 (2003–3853) | ND | 19 | 63 | ND |
| UK (n = 175) | 5 (2–8) | 7 (4–16) | .004 | 256 (137–1436) | 2372 (880–7313) | <.0001 | 311 (135–625) | 464 (145–1019) | <.001 |
| IR (n = 28) | 0 | 0 | ND | 0 | 0 | ND | 0 | 44 (a) | ND |
| NO (n = 17) | 7 (5–8) | 4 (3–8) | .32 | 2962 (2700–3223) | 5250 (5200–7082) | .18 | 57 (30–83) | 200 (65–370) | .18 |
| SE (n = 22) | 13 (7–16) | 12 (4–12) | .13 | 560 (458–7199) | 3146 (1892–12029) | .35 | 84 (75–92) | 142 (116–169) | .18 |
| FI (n = 9) | 0 | 0 | ND | 0 | 0 | ND | 0 | 0 | ND |
| DK (n = 24) | 1 (1–2) | 3 (3–3) | ND | 101 (51–152) | 120.0 (71–168) | ND | 0 | 0 | ND |
| All (n = 873) | 4 (2–13) | 7 (3–16) | <.001 | 575 (190–2444) | 3074 (724–10110) | <.001 | 204 (74–579) | 271 (85–724) | <.001 |

^a T1 = April to August 2009, T3 = April to July 2011.

^b NL = the Netherlands, BE = Belgium, LU = Luxembourg, DE = Germany, AT = Austria, CH = Switzerland, UK = United Kingdom, IR = Ireland, NO = Norway, SE = Sweden, FI = Finland, DK = Denmark.

^c Interquartile range.

^d Wilcoxon signed rank test.

^e No data.

YouTube

YouTube accounts were found in 10 countries (Table 3). At T3, we found significant differences in the percentage of YouTube usage ($\chi^2_{11} = 73.9$, $P < .001$). The Netherlands (38%, $n = 33$) and the United Kingdom (35%, $n = 62$) had the highest percentage of hospitals with a YouTube account. During the research period, the percentage of YouTube accounts increased significantly (Table 3). The median number of videos per YouTube account at T3 was 7 (Table 5).

Twitter

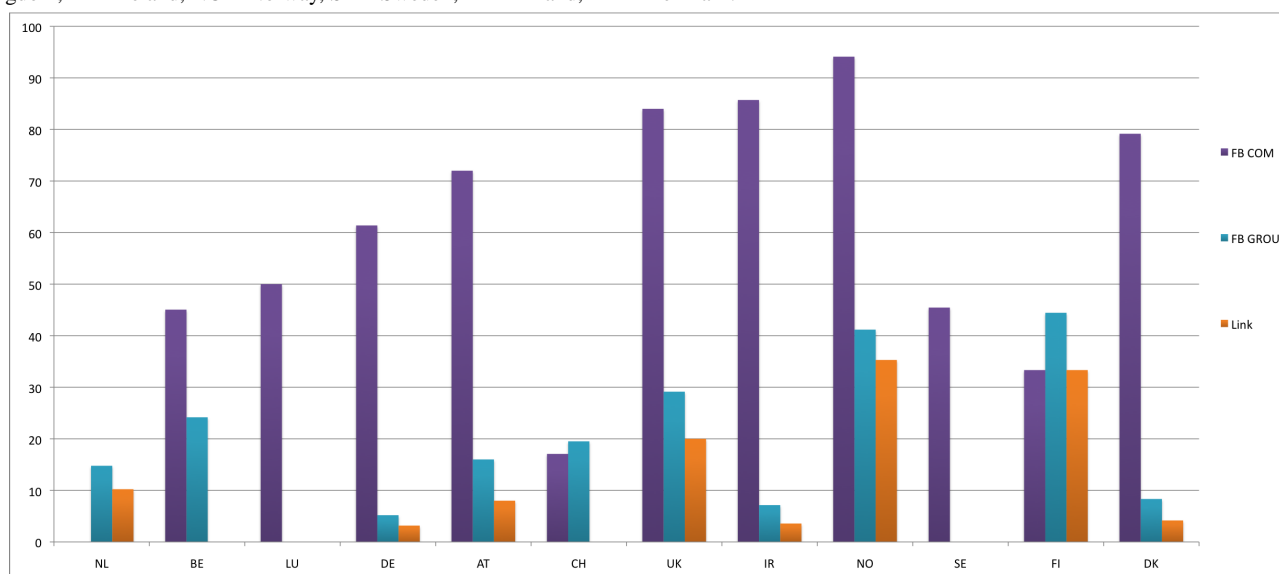
Twitter accounts were found in 8 of 12 countries (Table 3), with significant differences between countries ($\chi^2_{11} = 209.2$, $P < .001$) at T3. The Netherlands (56%, $n = 49$), the United Kingdom (39%, $n = 68$), and Norway (47%, $n = 8$) had the highest

percentages of hospitals with a Twitter account. The median number of followers for all countries at T3 was 271 (Table 5). We identified 1 hospital with 3300 followers.

Facebook

Facebook accounts were found in all countries, ranging from 15% ($n = 13$) in the Netherlands to 93.1% ($n = 163$) in the United Kingdom (Table 4). At T3, there was a significant difference between all countries in the percentage of Facebook usage ($\chi^2_{11} = 202.1$, $P < .001$). Facebook usage increased significantly in 11 countries. Two types of Facebook accounts were found: company profiles and group pages (Figure 1). The number of Facebook group pages was lower, ranging from 0% in Luxembourg to over 40% in Finland and Norway. Apart from 2 countries (Norway and Finland), having a Facebook page accessible through the hospital's website was an exception (Figure 1).

Figure 1. Percentage of Facebook company profiles (FB COM), group pages (FB GROUP), and links (Link) to a Facebook account on hospital websites at T3 (April to July 2011). NL = the Netherlands, BE = Belgium, LU = Luxembourg, DE = Germany, AT = Austria, CH = Switzerland, UK = United Kingdom, IR = Ireland, NO = Norway, SE = Sweden, FI = Finland, DK = Denmark.



Blogs

Blogs were found in 7 of the 12 countries, ranging from 1% ($n = 1$) in Germany to 9% ($n = 2$) in Sweden (Table 4). We found blogs less frequently than the other types of social media. The percentages of blogs differed significantly between countries ($\chi^2_{11} = 28.5, P = .003$).

LinkedIn

We measured LinkedIn during two periods (T2 and T3). We found significantly increased usage in 4 countries. At T3, the percentage of LinkedIn accounts ranged from 3% ($n = 10$) in Germany to 81% ($n = 71$) in the Netherlands (Table 4), and the percentages were significantly different ($\chi^2_{11} = 336.4, P < .001$). Of all 873 hospitals, we found 1 hospital with a link to their LinkedIn profile on their website.

Discussion

In this longitudinal study we explored the use of social media by 873 hospitals in 12 Western European countries. The use of social media increased in all of the countries, especially YouTube (from 2% to 19.7%), LinkedIn (20.5% to 31.8%), and Facebook (10% to 67.0%). This increased use of social media has been confirmed by other studies [14]. Interestingly, the use of Twitter, Facebook, and YouTube in Europe appeared to be higher than in the United States [15].

There are notable differences between the 12 countries. The use of Twitter was especially popular in the United Kingdom, the Netherlands, and Norway. At the third measurement, almost half of all hospitals in the Netherlands and in Norway were on Twitter. YouTube was used by 35% of the hospitals in the United Kingdom and 38% in the Netherlands, whereas the use of YouTube varied from 0% to 23% in all other countries. There are several possible reasons for the differences between countries that we found. First, the use of social media could be related to the Internet penetration in a specific country. However,

the differences in broadband penetration in Europe are small [21]. Second, there may be an influence of local or country-specific social media. An example is Hyves, which was, until recently, the most popular social network in the Netherlands, with more than 11 million members [22]. This could explain why Facebook was less popular in the Netherlands than in other countries. It is difficult to predict the popularity or influence of other social media. Online sources show that Facebook, when Hyves is excluded, was the most popular social media network in all other countries during the research period [19,20].

The activity of hospitals on social media increased during the research period, as the number of videos and viewers of YouTube channels, and of Twitter followers increased. Furthermore, the increased usage of LinkedIn was notable in the Netherlands and the United Kingdom at the third measurement. Hospitals in these countries seem to be aware of the benefits of recruiting personnel that LinkedIn offers. However, the observation that only 5% ($n = 48$) of all 873 hospitals had a link to their YouTube channel and 10% ($n = 90$) had a link to their Twitter feed on their website indicates that hospitals are not using the full potential of all types of social media yet. Based on this study, we cannot say anything about the content of videos, tweets, and messages. However, our data show that an ever-increasing number of users are watching the videos and reading the tweets.

Since Western European hospitals have become aware of social media and increasingly use it, we foresee great opportunities to improve health care and to stimulate participatory health care. Various studies have described improvements that social media could offer to health care, such as greater transparency, openness, and communication, and improved patient support and knowledge translation [4,10]. Therefore, research should be focused on describing best practices, which may help speed up implementation of social media. Furthermore, it would be worthwhile to identify for what purposes hospitals use social media and to what extent social media improve participatory

health care. For a complete overview, future research should also focus on the challenges and risks of using social media, such as legal constraints, fraud, and budget constraints. These topics are also important research subjects in the light of the discussion about desirability of social media usage by health care professionals.

Our study has some limitations that need to be discussed. In a few cases, we experienced difficulties determining whether a social network was official (was initiated and maintained by the hospital itself). However, we gave hospitals the opportunity to correct their data. Another aspect is the differences between health care systems in the included countries. We found that in a few countries, some hospital organizations included more than 1 hospital. Since we counted these organizations as 1 hospital, our data do not reflect the results of individual hospitals in every country.

Another aspect is that we measured Facebook and LinkedIn only at T2 and T3. It would have been interesting to see the results for T1. However, at the start of the project, we were not aware of hospitals using Facebook or LinkedIn. Since Facebook and LinkedIn became increasingly popular in 2009 and 2010, we decided to include them in the search we conducted in this study.

Awareness and use of social media is growing in Western European hospitals. Social media usage differs significantly between countries. Except for the Netherlands and the United Kingdom, the group of hospitals that are using social media remains small. Usage of LinkedIn for recruitment of personnel shows that hospitals are aware of the potential of social media. Future research is needed to investigate how social media lead to improved health care.

Conflicts of Interest

None declared.

References

1. Kaplan AM, Haenlein M. Users of the world, unite! The challenges and opportunities of social media. *Bus Horiz* 2010;53(1):59-68. [doi: [10.1016/j.bushor.2009.09.003](https://doi.org/10.1016/j.bushor.2009.09.003)]
2. Wikipedia. 2011 Oct 11. Social Media URL: http://en.wikipedia.org/wiki/Social_media [accessed 2011-10-13] [WebCite Cache ID 62PR0BqUP]
3. Eurostat Press Office. European Commission. 2010 Dec 14. Internet Access and Use in 2010: 80% of Young Internet Users in the EU27 Active on Social Media URL: http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/4-14122010-BP/EN/4-14122010-BP-EN.PDF [accessed 2011-10-13] [WebCite Cache ID 62PS2QwZi]
4. Bacigalupe G. Is there a role for social technologies in collaborative healthcare? *Fam Syst Health* 2011 Mar;29(1):1-14. [doi: [10.1037/a0022093](https://doi.org/10.1037/a0022093)] [Medline: [21417520](https://pubmed.ncbi.nlm.nih.gov/21417520/)]
5. Facebook. 2012. Statistics URL: <http://newsroom.fb.com/content/default.aspx?NewsAreaId=22> [accessed 2012-04-10] [WebCite Cache ID 66pOLrDLk]
6. US Census Bureau. 2011 Oct 13. US and World Population Clocks URL: <http://www.census.gov/main/www/popclock.html> [accessed 2011-10-13] [WebCite Cache ID 62PSd8ju7]
7. Barnes NG, Mattson E. University of Massachusetts Dartmouth Center for Marketing Research. 2010. The Fortune 500 and Social Media: A Longitudinal Study of Blogging and Twitter Usage by America's Largest Companies URL: http://dl.dropbox.com/u/395938/Barnes_Mattson_2010.pdf [accessed 2012-04-17] [WebCite Cache ID 66zGtnKL8]
8. Van De Belt TH, Engelen LJ, Berben SA, Schoonhoven L. Definition of Health 2.0 and Medicine 2.0: a systematic review. *J Med Internet Res* 2010;12(2):e18 [FREE Full text] [doi: [10.2196/jmir.1350](https://doi.org/10.2196/jmir.1350)] [Medline: [20542857](https://pubmed.ncbi.nlm.nih.gov/20542857/)]
9. Thinkinsights. Google/OTX. 2009 Dec. Health Consumer Study: The Role of Digital in Patients' Healthcare Action & Decisions URL: http://www.gstatic.com/ads/research/en/2009_HealthConsumerStudy.pdf [accessed 2012-04-13] [WebCite Cache ID 66tWju0o7]
10. The Change Foundation. 2011 Jun. Using Social Media to Improve Healthcare Quality URL: <http://www.changefoundation.ca/docs/socialmediatoolkit.pdf> [accessed 2011-11-09] [WebCite Cache ID 633zuJfkb]
11. Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. *Soc Sci Med* 2000 Oct;51(7):1087-1110. [Medline: [11005395](https://pubmed.ncbi.nlm.nih.gov/11005395/)]
12. Thielst CB. Using social media to engage patients: many tools exist to connect, communicate and build loyalty. *Healthc Exec*. 2011. (3) p. 66-70 URL: <http://thielst.typepad.com/files/satisfying-your-customers-with-social-media.pdf> [WebCite Cache ID 67Ff3BQIs]
13. Gamble KH. Just a tweet away. *Healthc Inform* 2009 May;26(5):30, 32, 34 passim. [Medline: [19514237](https://pubmed.ncbi.nlm.nih.gov/19514237/)]
14. Hawker MD. Social networking in the National Health Service in England: a quantitative analysis of the online identities of 152 primary care trusts. *Stud Health Technol Inform* 2010;160(Pt 1):356-360. [Medline: [20841708](https://pubmed.ncbi.nlm.nih.gov/20841708/)]
15. Bennett E. Found In Cache. 2010 Oct 19. Hospital Social Network List URL: <http://ebennett.org/hsnl/> [accessed 2011-11-09] [WebCite Cache ID 633zdEW1V]
16. American Hospital Association. 2011. Fast Facts on US Hospitals. Sep 14 URL: <http://www.aha.org/research/rc/stat-studies/fast-facts.shtml> [accessed 2011-11-09] [WebCite Cache ID 633zhyujA]
17. Wikipedia. 2011 Aug 20. Lists of Hospitals in Europe URL: http://en.wikipedia.org/wiki/Lists_of_hospitals_in_Europe [accessed 2012-01-14] [WebCite Cache ID 64gU1NGfd]

18. MediLexicon International Ltd. 2012. Worldwide Hospitals Directory URL: <http://www.hospitalsworldwide.com/> [accessed 2012-01-14] [WebCite Cache ID 64gU9UaUN]
19. Vincos Blog. 2012. World Map of Social Networks URL: <http://vincos.it/world-map-of-social-networks/> [accessed 2012-01-14] [WebCite Cache ID 64gUCPvux]
20. Edelman.com. 2010 Nov 19. Social Media Mapping in Europe URL: http://www.slideshare.net/EdelmanDigital/social-media-mapping-in-europe?from=ss_embed [accessed 2012-01-14] [WebCite Cache ID 64gUNFNQH]
21. Miniwatts Marketing Group. 2011 Aug 9. Internet and Facebook usage in Europe URL: <http://www.internetworldstats.com/stats4.htm> [accessed 2011-11-09] [WebCite Cache ID 633zlljWe]
22. Telegraaf Media Groep. 2012. Hyves URL: <http://www.hyves.nl/about/press/> [accessed 2012-02-24] [WebCite Cache ID 65glvugo0]

Edited by B Bewick; submitted 09.11.11; peer-reviewed by B Meskó, T Biswas; comments to author 07.12.11; revised version received 01.03.12; accepted 07.03.12; published 01.05.12

Please cite as:

Van de Belt TH, Berben SAA, Samsom M, Engelen LJLPG, Schoonhoven L

Use of Social Media by Western European Hospitals: Longitudinal Study

J Med Internet Res 2012;14(3):e61

URL: <http://www.jmir.org/2012/3/e61/>

doi: [10.2196/jmir.1992](https://doi.org/10.2196/jmir.1992)

PMID: [22549016](https://pubmed.ncbi.nlm.nih.gov/22549016/)

©Tom H Van de Belt, Sivera AA Berben, Melvin Samsom, Lucien JLPG Engelen, Lisette Schoonhoven. Originally published in the Journal of Medical Internet Research (<http://www.jmir.org>), 01.05.2012. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in the Journal of Medical Internet Research, is properly cited. The complete bibliographic information, a link to the original publication on <http://www.jmir.org/>, as well as this copyright and license information must be included.