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Title

A social way to experience a scientific event: Twitter use at the 7th European Public Health Conference

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Abstract

Aims

Many studies analysed Twitter's use by attendees of scientific meetings and the characteristics of conference-related messages and most active attendees. Despite these previous reports, to date no studies have described the use of Twitter during Public Health conferences. For this reason, we decided to perform an analysis of Twitter's use during the 7th European Public Health (EPH) Conference (Glasgow 19-22 November 2014).

Methods

All the tweets published from 21 July to 2 December 2014 and including the hashtag #ephglasgow were retrieved and several information (author, date, retweets, favourites, mentions, presence of pictures and/or external links, content type and topics) were analysed using Stata MP11.

Results

A total of 1067 tweets with the hashtag #ephglasgow were retrieved, 86.3% of these were tweeted during the conference. A total of 209 single accounts tweeted, pictures were present in 29.7% tweets while external links were published in 13.8%. Conference speakers were mentioned in around 30% of tweets. Almost the 60% of the tweets had a session-related content. Considering only the session-related tweets, one third had as main topic "Health inequalities and migrant and ethnic minority health", while 20% were "Health policy and health economics" oriented.

Conclusions

Twitter's use during conferences is a growing phenomenon that allows public health professionals to be informed on all aspects of conference. Meeting's organisers have to promote online discussion and conference-related knowledge dissemination. Further studies are needed to highlight potential and issues of this communication tool, especially in the multidisciplinary public health field.

Keywords: Social media; Twitter; Public Health; Conference.

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Introduction

The use of social media, defined as "websites and applications that enable users to create and share content or to participate in social networking" [1], is increasing year after year [2,3]. Twitter, a platform that allow users to write short messages (up to 140 characters) is one of the most popular social media, with 284 million monthly active users and 500 million tweets sent per day [4]. In recent years, Twitter has become a useful tool for medical and scientific purposes [5-8]. A particular application of Twitter is its use during scientific conferences. The potential of Twitter in increasing networking skills, attendees connectivity, participation in debates and knowledge sharing is largely recognized [9.10].

Twitter enables the creation of an hashtag, that is a keyword (or unspaced phrase) preceded by the symbol "#", by which it is possible to identify all the tweets related to a specific topic [11]. Many conference organizers have started creating an official hashtag in order to identify all the tweets related to the specific conference [12-14].

Several studies have analysed the use of Twitter by attendees of scientific meetings, assessing the total use of this platform, the characteristics of the conference-related messages, and the most "productive" attendees [12-22]. For example, Radmanesh and Kotsenas analysed Twitter use during the 2014 annual meeting of the American Society of Neuroradiology, showing the average numbers of tweets per day and the total number of users stratified for professional category [13]. In another study Mishori et al. analysed public tweets coming from the 2013 STFM (Family Medicine) Annual Spring Conference to see who was talking about the conference and in what ways [12]. Wilkinson et al., instead, observed the trends variation in the use of Twitter at eight urology conferences that took place in 2013 [14]. Despite these previous reports, to date no studies have described the use of Twitter during Public Health conferences.

For this reason, we decided to perform an analysis of the use of Twitter during the 7th European Public Health (EPH) Conference that was attended by more than 1500 attendees and took place in Glasgow, Scotland (UK) from 19 to 22 November 2014 [23]. The EPH Conference is an annual scientific meeting addressed to all public health and health services professionals and students worldwide. The conference is initiated by the European Public Health Association (EUPHA), and organised in collaboration with other partners [24]. In July 2014, the official hashtag #ephglasgow was created and tweeted for the first time by

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the conference organisers, and during the conference all the attendees were invited to include this hashtag in their tweets.

The aim of the present paper is to describe quantitatively and qualitatively all the tweets that included the official hashtag of the EPH Conference, to evaluate how much this social media was used during this meeting and which were the most active users.

Methods

All the tweets that included the hashtag #ephglasgow were retrieved from the website www.twitter.com, by using the tool "search on Twitter" [25]. Tweets published from 21 July 2014 (day in which the hashtag #ephglasgow appeared for the first time) to 2 December 2014 (ten days after the end of the conference) were included in our study. For each tweet, information about the author, the day in which the tweet was sent, the presence of pictures and/or external links, how many times the tweets from any account was amplified or emphasized by retweeting or favouring, the mention of any other twitter account (by using the symbol @) and the language of the tweet (English/other languages) were retrieved by two independent researchers. The same two researchers manually analysed the text of each tweet published, retrieving information about any mention of conference speakers in the text. Speakers were defined as all the people that were talking to an audience during pre conferences, plenary sessions, workshops, oral, pitch and poster presentations.

Furthermore, all the tweets were categorised as follows, on the basis of previous studies on this topic [13,15,21]:

1) Session-related: content related to a conference session (impressions, quotes, other). E.g. "Margaret Whitehead recommending the EU funded #demetriq at #ephglasgow showing introduction of UK minimum wage improved #mentalhealth";

2) Social: not related to the content of the sessions, (jokes, humour, social relations). E.g. "Did you meet Sir Roger the Elephant at Kelvingrove museum last night? #ephglasgow #ephglasgowquiz @EPHconference";

3) Logistic: information given to attendees about sessions or organizational aspects. E.g. "Meet & Greet #ephglasgow w/ Presidents Sections Environment, Health Promotion, Practice & Policy, Chronic Diseases at @EUPHActs stand, 12:15";

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4) Advertising: commercial tweets, promotion of products. E.g. “Visit our exhibition stand @EPHconference for free access & to find out more about our books & journals #ephglasgow”;

5) Scientific promotion: promotion of papers and scientific works. E.g. “Very interesting @PLOSONE @rickwahs paper presented #ephglasgow on decommodification & health ineq by welfare regime http://www.plosone.org/article/info...” ;

6) Other: tweets not related to the other five categories.

The “session-related” tweets were further categorised in six different topics:

1) Health promotion (including advocacy and health literacy);

2) Health policy and health economics (including tweets related to the economic crisis);

3) Health inequalities (including migrant and ethnic minority health);

4) Public health training, education and research;

5) Communicable/non-communicable diseases;

6) Other (all the tweets not strictly related to the previously mentioned five topics).

All the re-tweets were excluded from our analysis in order to avoid misclassification of topics.

Analysis were performed using STATA V.11 (Stata Corp, College Station, Texas, USA, 2011) showing percentages for dichotomic and categorical variables, and mean and standard deviations for continuous variables.

Results

Tweets statistics

A total of 1067 tweets with the hashtag #ephglasgow were retrieved. Table 1 describes the main characteristics of the tweets collected. The most part were tweeted during the four days of the conference (921 - 86.3%), while 102 (9.6%) were published before the conference (21 July – 18 November 2014) and 44 (4.1%) in the ten days after. A total of 209 single accounts tweeted using the hashtag #ephglasgow, for an average of 5.6 tweets per account. Considering only the 921 messages tweeted during the conference, the highest number of these (288 – 31.3%) were sent on Friday 21 November 2014, and the lowest number (155 – 16.8%) on Wednesday 19 November, the day in which only pre-conferences were organised.

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The overwhelming majority of the tweets retrieved were in English, while only eight were written in other languages. Pictures were present in around one third of the tweets (29.7%) while external links were published in 13.8%. It must be noted that almost 90% of the "scientific promotional" tweets included an external link, compared with the 4% of the "conference-related tweets". (Data not shown).

Around half of the messages mentioned at least a twitter account (by using the symbol @).Conference speakers were mentioned in around one-third of the tweets. Among these, if we consider only the conference-related tweets, nearly 50% mentioned a speaker.

Tweets' "popularity"

The popularity of each tweet was assessed through the number of re-tweets and "favourites" (Table 1). The mean of the re-tweets was 1.55 ±0.18 (range 0-52) while the mean of "favourites" was 0.79±0.08 (range 0-13). The tweet with the highest number of re-tweets was written by the actual president of the European Public Health Association, Prof. Martin McKee, while the one with more "favourites" described a sarcastic flow chart for asking questions at a conference (Data not shown).

The most active account, with a total of 72 tweets, was the one of Vesna Bjegovic, president of the Association of Schools of Public Health in the European Region (ASPHER), followed by the official account of the EPH Conference with 40 tweets (Figure 1). The most mentioned account was, as expected, @EPHConference (165 times) while the second one was @ASPHERoffice, official account of ASHPER (Figure 1).

Qualitative analysis of the tweets

Table 2 shows number and percentages of tweets for each category. Almost 60% of the tweets had a session-related content (quotes, impressions, comments related to something that was discussed during a specific session of the conference). Social and logistic categories accounted for around 16% of the total tweets each, while promotional tweets (scientific and non scientific) represented a total of 8% of posts published. In Table 3, statistics about contents and topics of tweets are reported. Looking at the session-related tweets only, one third had as main topic "Health inequalities and migrant and ethnic minority health", while 20% were "Health policy and health economics" oriented and 18% about Public Health education, training and

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research. A relatively small number of tweets were published regarding "Communicable and non-communicable diseases" (5.4%).

Discussion

This paper aimed to describe quantitatively and qualitatively all the tweets that included the official hashtag of the last European Public Health (EPH) Conference in order to evaluate how much Twitter was used during this meeting and who were the most active users. The 7th EPH Conference in Glasgow was attended by over 1500 delegates from 65 countries. The programme consisted of 7 plenary sessions, 16 pre conferences, 47 workshops, 27 oral sessions, 27 pitch sessions and 18 poster walks.

To our knowledge, the present work is the first study analysing statistics and contents of tweets published during a Public Health Conference. Of the 1500 public health professionals and students attended the 7th EPH Conference in Glasgow, only 14% (209 attendees) were us Twitter Contributors (TC) that used #ephglasgow hashtag. In another study the proportion of attendees among TC was similarly high, as reported by Awad and Cocchio in a paper about the use of Twitter at a major national pharmacy conference (90.3% of TC) [15]. A relatively high percentage of tweets (~10%) was published before the conference, in many cases to promote specific sessions of the scientific event or to provide logistic information for attendees. Only 25% (25/102) of the tweets posted before the conference was published by the official organizers' accounts, demonstrating a successful and satisfying involvement of attendees.

A third of the tweets included an event-related picture. In many cases the subject of the pictures was represented by slides of ppt presentation of conference speakers, published with the aim of increasing the dissemination of scientific messages and enriching the content of tweets with scientific data and graphs. Interestingly, 14% of the tweets analysed included an external link. In particular, almost 90% of the "scientific promotional" tweets included an external link, compared with 4% of the "conference-related tweets". This difference is easily explainable considering the potential willingness of attendees to promote their work and publications, taking advantage of the official hashtag of the conference. Through this tool, attendees tried to increase the impact of their studies among scientific community.

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The large number of mentions, re-tweets and favourites highlights the function of Twitter as a tool of networking and social connector for scientific professionals. This feature is even more important if we consider the multi-disciplinary and intersectoral structure of the public health field.

Obviously the most part of the tweets were conference-related. This suggests that Twitter could be helpful to increase the level of debate during a conference. This suggestion was previously proposed by other authors, such as Ronald et al. who supposed that "Twitter could improve presentation quality, particularly if speakers were informed of the capabilities of social media and the need of clarity of key messages" or McKendrick et al. who claimed that Twitter use can further reinforce the "real" learning points from each talk or session[20,22,26]. Since Twitter use seems to be related to a positive impact on conference quality, the use of this kind of tool should be encouraged by conference organisers. The European Public Health Association tried to facilitate and promote the use of Twitter and to increase the number of tweets by implementing the Twitter Wall. During plenary sessions, indeed, on the big screen behind the speakers a Twitter timeline containing the hashtag #ephglasgow was projected and the moderator asked the audience to use Twitter for questions directed to speakers. Two "Twitter Wall moderators" made a "live" selection of all the tweets related to the topic of the session and deleted inopportune and off-topic tweets. The role of the Twitter Wall during the conferences deserves to be further examined in future studies.

The "topic" most tweeted was the following one: "Health inequalities and migrant and ethnic minority health". The preference for this theme can be easily related to the title of the Conference "Mind the gap: Reducing inequalities in health and health care" that oriented the choice of key-note speakers during plenary sessions, and the contact in roundtables and workshops [27].

The biggest contributors in terms of tweets published were the official account of EPH Conference and the president of ASPHER. The relevance given by these associations to social media is in line with what is proposed and implemented by other scientific societies, such as the American Academic of Orthopaedic Surgeons (AAOS) or the Society of Teachers of Family Medicine (STFM) [12-18]. The involvement of attendees in debates and discussion is part of the new strategy of EUPHA which aims to facilitate and activate a strong voice of the public health network by enhancing visibility of the evidence and by strengthening the capacity of public health professionals. Three main objectives of this "EUPHA Strategy 2014-2020", indeed, are: 1. To be a leading scientific and independent voice in the field of public health and

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health services research and policy; 2. To build capacity and knowledge in the field of public health and health services research with the aim of supporting evidence-informed practice and policy decisions; and 3. To prepare future generations of engaged and connected public health professionals for their leadership role in public health. The use of social media is a recognized tool to achieve these aims [28,29].

We are aware that this study has some limitations that deserve discussion. First of all, we analysed only the tweets including the hashtag "ephglasgow". This could be reductive and could underestimate the real amount of online discussions about the EPH conference, especially if no hashtag or no official hashtags were used. However, the official hashtag was repeatedly suggested before and during the conference (e.g. on the programme booklet) in order to convey the information flow.

Secondly, we decided to stop the tweets collection ten days after the end of the conference and messages tweeted after this date were not included in our search. Nevertheless, the number of tweets using the hashtag #ephglasgow drastically decreased just after the conference since the hashtag for the upcoming EPH conference was already launched (#ephmilan). Finally, we only checked the tweets related to the 7th EPH Conference and therefore we limit our consideration to this specific scientific event. Further studies are needed to evaluate time trends and to analyse how this social media will change the way the delegates perceive the participation in scientific conferences.

Conclusions

Social media use, and especially Twitter, during scientific events is a growing phenomenon that allows public health professionals to propose questions to the presenters, to debate about topics of interest, to provide insights about sessions for those who have not attended the conference. In present time, it is mandatory for conference organisers to keep attention and to promote online discussion and knowledge dissemination during conferences. Further studies are needed to highlight the potential and issues of this communication tool and to supply information that can help organisations and societies to build a strategy for social media utilisation. This is particularly important in the public health field where the wide audience of interested people is well suited to the system of dissemination of key-points typical of microblogging tools as Twitter.

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Conflicts of interest

Fabrizio Bert and Giacomo Scaioli are EUPHAnxt coordinators.

Dineke Zeegers Paget is the executive director of EUPHA and director of the EPH Conference Office.

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Table 1. Quantitative analysis of the tweets that used the hashtag #ephglasgow (N=1067)

		N	%
Date	Before the conference	102	9.6
	During the conference	921	86.3
	After the conference	44	4.1
Pictures	Yes	317	29.7
	No	749	70.3
Links	Yes	147	13.8
	No	919	86.2
Language	English	1058	99.2
	other	8	0.8
Mentions (@)	Yes (one or more)	561	52.6
	no	505	47.4
Retweets		1.55[a]	±0.18[b]
Favourites		0.79[a]	±0.08[b]
Speaker mention	Yes	354	33.2
	No	712	66.8

[a] Mean
[b] Standard Deviation

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Table 2. Number and percentages of tweets for each category (N=1067)

Tweet category	N	%
Conference-related	628	58.9
Social	175	16.4
Logistic	168	15.8
Promotion	37	3.5
Scientific promotion	46	4.3
other	12	1.1

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Table 3. Number and percentages of conference–related tweets for each main topic (N=628).

Topic	N	%
Health promotion, advocacy, health literacy	82	13.0
Health policy and health economics	130	20.7
Health inequalities and migrant and ethnic minority health	192	30.6
Public Health education, training and research	111	17.7
Communicable and non-communicable diseases	34	5.4
Other	79	12.6

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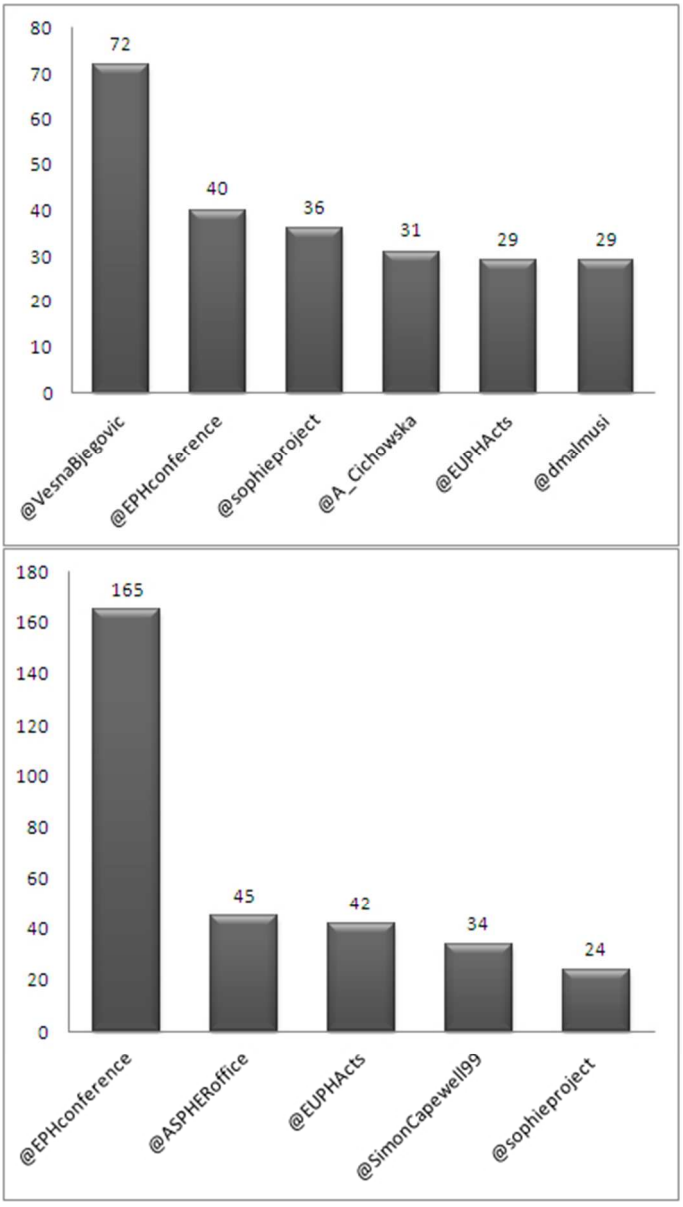

Figure 1. Most prolific and most mentioned accounts.
113x200mm (96 x 96 DPI)