

#CGS2015: An Evaluation of Twitter Use at the Canadian Geriatrics Society Annual Scientific Meeting



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ABSTRACT

Background

Twitter is a microblogging platform increasingly used in medicine to overcome geographic barriers and promote international connections. Tweets, the 280-character microblogs, are catalogued by hashtags (#). This study evaluates and describes the participation, content, and impact of Twitter at the 2015 Canadian Geriatrics Society (CGS) Annual Scientific Meeting, during which #CGS2015 was the official conference hashtag.

Methods

Twitter transcripts of #CGS2015 were obtained from Symplur to prospectively analyze tweets for content and quantitative metrics. TweetReach was used to retrospectively analyze tweets with the hashtag #CGS2014 from the 2014 meeting for growth analysis. The impact of Twitter on the conference experience was derived from questionnaires.

Results

There were 1,491 #CGS2015 tweets, 40% of which were original. Tweet content was categorized into conference sessions (38.8%), networking (29.2%), resource sharing (17.6%), and conference promotion (14.3%). Of the 279 participants, 60% were non-Canadian. The questionnaire data from 86 respondents demonstrated generally positive experiences with Twitter, particularly with facilitating collegial interactions, resource sharing, and insight into sessions not attended live. The most cited drawback was divided attention when using personal devices. Analysis comparing #CGS2014 to #CGS2015 demonstrated increases in total participants (50 to 279), number of tweets (434 to 1,491) and impressions (155,600 to 943,825).

Conclusions

Twitter engagement at the CGS 2015 annual meeting enabled international participation in networking, resource sharing, and online discussions of sessions. Future conferences may benefit from a workshop on Twitter basics for attendees and presenters.

Key words: Twitter, social media, blogging, information dissemination, medical education, conference

INTRODUCTION

Continuing medical education (CME) is an increasingly valued professional responsibility for physicians,⁽¹⁾ particularly in an era where the practice of medicine adapts and changes at unprecedented rates. Educational meetings, including conferences, courses, lectures, workshops, seminars, and symposia, are some of the most common CME activities.⁽²⁾ A systematic review by Forsetlund *et al.* demonstrated that educational meetings can improve professional practice and patient outcomes.⁽³⁾

Online communication has evolved rapidly alongside continuing medical education. Social media encompasses the broad spectrum of online communication tools that provide channels to connect people.⁽⁴⁾ This expanding online community is defined by interactive applications that promote user-generated and user-controlled content.⁽⁵⁾ These applications enable users to independently create or share content, allowing for instant feedback, ongoing commentary, and interactive global discussion.⁽⁶⁾

Social media may play an important role in reducing common barriers in conferences, particularly the difficulties in engaging with the large numbers of presenters and attendees.⁽⁷⁾ Twitter is the most widely used social media microblogging application, with 328 million monthly active

users as of 2016.⁽⁸⁾ Up until September 2017, a tweet was limited to 140 characters. Tweets are catalogued by hashtags (#), which highlight trending topics and keywords to help users find relevant messages. Users can post original tweets, reply to others' tweets, or repost others' tweets to their followers, known as a "retweet". Tweets can also contain links to websites or other media.

Twitter is increasingly utilized during scientific conferences to allow for real-time international conversations, critical appraisal, and networking.⁽⁶⁾ Conference-related Twitter activity provides an opportunity for participation without physical restriction, enabling allied health-care workers, researchers, caregivers, and patients to engage in the online conversation.

Specialties including Anesthesia, Cardiology, Emergency, Family Medicine, General Surgery, Urology and other surgical specialties, Nephrology, Oncology, and Radiology have analyzed the use of Twitter at their respective scientific meetings with conference-specific hashtags.^(6,7,9-15) The results of these analyses have concluded that Twitter use during scientific conferences is beneficial for information dissemination, engagement, and collaboration. To our knowledge, no Geriatric Medicine conference has been evaluated for the role of Twitter in the aforementioned areas.

To address the gap in Geriatric Medicine-focused social media, we created the hashtag #CGS2015 for the 2015 Annual Scientific Meeting of the Canadian Geriatrics Society (CGS). The purpose of this hashtag was to aid in the dissemination and appraisal of geriatric research and knowledge and to promote international conference participation. This study evaluates and describes the participation, content, and impact of the live Twitter stream at the 2015 Canadian Geriatrics Society Annual Scientific Meeting.

METHODS

This study is comprised of two parts: firstly, an analysis of the tweets using the Twitter hashtag #CGS2015, and secondly, a questionnaire assessing the impact of Twitter on the conference experience.

Study Setting

The 2015 Canadian Geriatrics Society Annual Scientific Meeting was held from April 16 to 18, 2015 in Montréal, Quebec. Approval for use of the hashtag #CGS2015 was received from the Canadian Geriatrics Society and promoted by the Canadian Geriatrics Society Twitter handle (@CanGeriSoc) for the month leading up to conference.

Twitter Hashtag Analysis

The hashtag #CGS2015 was registered with the Symplur™ Healthcare Hashtag Project (Symplur LLC, Upland, CA), enabling tweets associated with the hashtag to be extracted

and analyzed (www.symplur.com) prospectively. The analysis period included the week prior to the start of the conference, the three days of the conference, and the three days after the conference. A transcript of all tweets that included "#CGS2015" was downloaded using the Symplur™ Twitter analytic tool. An additional third-party Twitter analytic tool, TweetReach (www.tweetreach.com), was used to retrospectively analyze tweets with the hashtag "#CGS2014" for historical comparison to the 2014 CGS annual meeting. The total number of tweets, comprising original tweets and retweets or modified tweets, was obtained. Tweet impact was expressed as "impressions," which is a numerical value representing the potential views a tweet may receive—a standard directional metric in Twitter. The impressions metric was calculated by Symplur™ by multiplying the number of Tweets per participant with the number of followers that the participant currently has. Growth was determined by comparing the total number of #CGS2015 tweets, participants, and impressions to #CGS2014. Demographics of Twitter users, including occupation and country of origin, were retrieved via self-reported information from the public Twitter profiles. The tweets were sorted into four categories: 1) Session-related: reflects content of sessions or information and commentary directly related to the subject of the session; 2) Networking and Social: social comments without particular educational or research value, and communication between participants not relating to session content or resource sharing; 3) Resource Sharing: identification of additional resources related to conference subjects, including links to websites, journal articles, or non-conference meetings; 4) Conference Promotion: promotion of current or future conference sessions, meetings, awards, or educational and research opportunities, and promotion of Twitter use. Two study authors conducted the content analysis independently, and disagreements were resolved by a third study author. Descriptive statistics were expressed in proportions for categorical variables. Inter-rater reliability of categorization was expressed as a kappa statistic.

Questionnaire Analysis

All attendees of the CGS 2015 annual meeting received a paper questionnaire as part of the conference package. The questionnaire consisted of 11 questions, with categorical options for respondent demographics, Twitter usage in general, and user experience of the #CGS2015 hashtag. The questionnaire also had three open-ended questions to explore the impact of Twitter on the conference experience, drawbacks of Twitter, and general comments. A copy of the questionnaire was also made available online and promoted with the @CanGeriSoc Twitter handle. The online version of the questionnaire enabled the authors to include data from people who did not attend the conference live, but were participating in the online discussion via Twitter. Questionnaire analysis was an iterative process between two study personnel using an inductive approach to identify themes.

Research Ethics Approval

Ethics approval was obtained from the Research Ethics Board at the University of Toronto. All personal information was de-identified.

RESULTS

Twitter Hashtag Analysis

There were 1,491 tweets with the hashtag #CGS2015 created by 279 contributors, with 943,825 impressions. Of the 1,491 tweets, 595 were original tweets and 896 were modified tweets or retweets. The study authors participating in the conference accounted for 167 tweets, with 112 being original tweets. The Twitter account of the Canadian Geriatrics Society, @CanGeriSoc, accounted for 102 tweets, with 39 being original tweets. Tweets from the study authors and @CanGeriSoc comprised 18% of total tweets and 25% of original tweets.

The two categories of users with the greatest representation were allied health professionals (18.3%) and non-geriatrician physicians (16.1%). Users came from seven different countries, with the majority from Canada (40.1%) (Table 1).

In comparing the 2014 (#CGS2014) and 2015 (#CGS2015) Twitter data, there were 434 tweets with the hashtag #CGS2014 created by 50 contributors, with 155,600 impressions (Table 2). From #CGS2014 to #CGS2015, there was a 243.6% increase in the number of Tweets, 458.0% increase in the number of users, and 506.6% increase in the number of impressions.

Most tweets were session-related ($n=578$, 38.8%). Networking and social ($n=435$), resource sharing ($n=263$), and conference promotion ($n=213$) represented 29.2%, 17.6%, and 14.3% of the tweets, respectively (Table 3). The tweet classification agreement between the two raters was moderate, $\kappa = 0.576$ (95% CI), $p < .0005$.

Questionnaire Analysis

Eighty-two of the 318 conference attendees completed the questionnaire, achieving a 25.8% response rate (Table 4). Four additional responders completed the online questionnaire but did not attend the conference live. Questionnaire responders identified themselves as staff physicians (53.7%), residents or fellows (26.8%), medical students (14.6%), and allied health professionals (4.9%). 44.7% of responders had a Twitter account prior to the conference ($n=38$). After the conference, 58.1% of responders had a Twitter account at the time of filling out the questionnaire ($n=50$). 41.0% of responders stated that they followed the official CGS Twitter handle, @CanGeriSoc. Most responders used Twitter occasionally, with 45.3% using it once a month or less. The majority of responders followed 10 or fewer users (44.4%) and had 10 or fewer followers (57.1%).

TABLE 1.

Demographic characteristics of Twitter users during the Canadian Geriatrics Society Annual Scientific Meeting 2015

<i>Characteristics of Users</i>	<i>n=279</i>	<i>Percentage of Total Users (%)</i>
Type Of Account		
Allied Health Professional	51	18.3
Non-Geriatrician Physician	45	16.1
Geriatrician	33	11.8
Organization	32	11.5
Trainee	26	9.3
Other	23	8.2
Unknown	69	24.7
Country		
Canada	112	40.1
United Kingdom	41	14.7
United States	26	9.3
Europe	11	3.9
Australia	9	3.2
New Zealand	3	1.1
Egypt	1	0.4
Unknown	76	27.2

The majority of responders found the #CGS2015 hashtag useful (56.7%). 40% and 30% of responders found #CGS2015 was useful for communicating about plenary sessions and lectures series, respectively.

Themes pertaining to the impact of Twitter on the conference experience included: resource sharing of clinical research and facilitation of interaction with other conference participants (e.g., “#CGS2015 connected me with physicians and other fellow trainees and made myself feel, as a relatively new learner, like I was part of a community”); making connections nationally and internationally (e.g., “maintain connections across the country and even internationally—this is particularly helpful for a relatively small specialty”); and the extension of discussion beyond the formal sessions (e.g., “I think it has really helped to get discussions going about topics outside of their presentations. It helps me be informed about the sessions I did not attend”). Commonly identified drawbacks of Twitter usage during the conference included divided attention from the participants (e.g., “it may appear as though the individual using his/her handheld device may not be paying attention to the lecture”); and distraction for both the attendees and presenters during the sessions (e.g., “sometimes was actually a distraction...trying to tweet and missing segments of the lecturers’ talk as a result”).

General comments from questionnaire respondents included that the #CGS2015 hashtag inspired individuals to register for a Twitter account. Barriers to Twitter usage

TABLE 2.
Net and percent increase of number of tweets, users, and impressions in the 2015 (hashtag #CGS2015) compared to the 2014 (hashtag #CGS2014) Annual Scientific Meeting

	2014	2015	Net Increase	% Increase (%)
Number of Tweets	434	1,491 ^a	1,057	243.6
Number of users	50	279	229	458.0
Number of impressions	155,600	943,825	788,225	506.6

^a Of the 1491 #CGS2015 tweets, two were unclassifiable as they were not written in English.

TABLE 3.
Tweet content categorization scheme with examples

<i>Tweet Content</i>	<i>Definition</i>	<i>Example</i>
Session-related	Reflects content of sessions or information and commentary directly related to the subject of the session.	“Faster gait speed is associated with lower risk of death in #geriatric #oncology population.”
Networking/social	Social comments without particular educational or research value, and communication between participants not relating to session content or resource sharing.	“Get ready for the #thickenedliquidchallenge brought to you by @GeriInterestGp-are you game?”
Resource sharing	Identification of additional resources related to conference subjects, including links to websites, journal articles, or non-conference meetings.	“Students and Residents! British @CanGeriSoc President just showed me this great Geriatrics Education Resource http... ”
Conference promotion	Promotes current or future conference sessions, meetings, awards, or educational and research opportunities, and promotion of Twitter use.	“One week until @CanGeriSoc annual meeting (April 16-18). Use and follow #CGS2015.”

included social media being too overwhelming and privacy concerns. Recommendations included a “workshop on the ABCs of Tweeting”.

DISCUSSION

There is limited data on the impact of social media on Geriatric Medicine education. A recent study described the use of Twitter to complement the traditional format geriatric journal club at an academic institution using the hashtag #GeriMedJC.⁽¹⁶⁾ The moderator account encouraged content experts, study authors, and followers to participate in critical appraisal of the literature presented at a monthly live journal club. In its first year, the @GeriMedJC account grew to 541 followers, with a mean of 121 Tweets and 104,831 impressions per journal club session. While Twitter is increasingly being used at medical conferences worldwide, this is the first study to describe its usage and effect at a Geriatric Medicine conference.

This study confirms the growth and impact of the use of an official conference hashtag at a Geriatric Medicine conference. These results are consistent with similar studies across other medical subspecialties.^(7,12,17) The growth of Twitter use is particularly significant in a small specialty such as Geriatric Medicine, with 276 geriatricians in Canada as of 2016.⁽¹⁸⁾ In comparison, specialties that have demonstrated growth in

Twitter use are larger in size, with 2,477 radiologists, 579 oncologists, and 691 urologists in Canada as of 2016.⁽¹⁸⁾

The #CGS2015 hashtag was able to encourage participants to sign up for a Twitter account or more actively use Twitter during the conference. Many participants in this study were not active users of Twitter, as the majority of users used Twitter once per month or less, followed 10 or fewer users, or had 10 or fewer followers. This may be explained by participants who were inspired to create an account during the conference and had just begun using Twitter. In addition, those who had pre-existing Twitter accounts but were not active may have logged on primarily for the purpose of the conference.

The diversity of participant demographics in our study, including occupation and country of origin, demonstrates the ability of Twitter to influence connections and facilitate professional interactions that may have otherwise not occurred. Twitter use in the CGS 2015 annual meeting has also shown interprofessional interactions, mirroring the interprofessional nature of clinical practice in Geriatric Medicine.

The majority of the #CGS2015 tweets were related to educational content, including content-related sessions and resource sharing. This highlights the significant role that Twitter plays in continuing medical education.

There are several limitations of this study. The analysis only included tweets with the hashtag #CGS2015. Related

TABLE 4.

Questions with categorical data in the questionnaire given to both in-person and online participants of the CGS Annual Scientific Meeting (n=86)

<i>Question</i>	<i>Percentage (%)</i>	<i>Question</i>	<i>Percentage (%)</i>
<i>Q1. Online vs. Physical Attendance (n=86)</i>		<i>Q7. How many people follow you on Twitter? (n=63)</i>	
Physical Attendance	95.4	10 or fewer	57.1
Online Attendance	4.7	11-100	31.8
<i>Q2. Training Level (n=82)</i>		101-250	4.8
Medical student	14.6	251-500	3.2
Resident/Fellow	26.8	500+	3.2
Staff Physician	53.7	<i>Q8. Did you tweet using #CGS2015 during the meeting? (n=80)</i>	
Allied Health Professional	4.9	Yes	25.0
<i>Q3. Do you currently have a Twitter account? (n=86)</i>		No	75.0
Yes	58.1	<i>Q9. Did you follow the thread of #CGS2015 tweets? (n=82)</i>	
No	41.9	Yes	39.1
<i>Q4. Did you have a Twitter account before CGS2015? (n=85)</i>		No	61.0
Yes	44.7	<i>Q10. I found #CGS2015 a useful platform for communicating about (check all that apply): (n=60)</i>	
No	55.3	Plenary sessions	40.0
<i>Q5. How often do you use Twitter? (n=64)</i>		Lecture series	30.0
Multiple times per day	9.4	Promotional activities	28.3
Once a day	12.5	Medical education	26.7
More than once a week, less than daily	20.3	Clinical practice	23.3
More than once a month, less than once a week	12.5	Health policy	15.0
Once a month or less	45.3	I did not find #CGS2015 useful	43.3
<i>Q6. How many people do you follow on Twitter? (n=63)</i>		<i>Q11. Do you follow the @CanGeriSoc? (n=83)</i>	
10 or fewer	44.4	Yes	41.0
11-100	39.7	No	59.0
101-250	9.5		
251-500	3.2		
500+	3.2	<i>Total number of submitted questionnaires</i>	86

tweets without the hashtag would not have been captured, thereby potentially underestimating the impact. Additionally, unlike the #CGS2015 hashtag, the #CGS2014 hashtag was not officially promoted and, as a result, the number of tweets regarding the 2014 conference may have been underrepresented as potentially fewer participants were made aware of the #CGS2014 hashtag. Moreover, the moderate kappa for inter-rater reliability of the categorization of tweets may be due to the overlapping nature of promotion and networking tweets, as well as the session-related and resource sharing tweets, as these were the largest identified discrepancies between the two raters. The questionnaire response rate was 26% and may not have been representative of the entirety of conference attendees. Finally, Twitter user demographics were based on self-reported information from the public

Twitter profiles, of which several had missing data and may not have been accurate.

Future Directions

Twitter engagement at the 2015 CGS Annual Scientific Meeting enabled international participation in online discussions of conference-specific sessions, resource sharing, and networking. Twitter enhances the experience of conference attendees and has the potential to be used as a powerful tool for research and advocacy. This will increasingly become important as health care adapts to an aging population. Knowledge translation of research into clinical practice can be facilitated by Twitter as experts worldwide share and discuss recently published literature.⁽¹⁹⁾ Furthermore, a small survey of advocacy groups in the

United States demonstrated that nearly all groups believed that “social media are effective tools for facilitating civic engagement and collective action”, with 96% of the groups saying that they use Twitter to communicate with the general public.⁽²⁰⁾

Twitter’s user-generated content poses challenges for health-care communication and information dissemination. Privacy and confidentiality for patients and colleagues can be difficult to regulate on social media. The ease at which users can share content acts as a “double-edged sword”, as it potentially leads to the risk of implementing new knowledge into practice before it can be assessed for safety and efficacy.⁽¹⁹⁾ This is a problem that will undoubtedly be encountered in the conference setting where new research is being presented. However, while there is concern that information provided on Twitter may not be reputable, there is currently little evidence to either prove or disprove this claim.⁽¹³⁾

Recommendations to improve experiences using Twitter in future conferences include a Twitter guide regarding tweet etiquette and the proper citation of findings, options for presenters to request unpublished data not to be shared via social media, and the establishment of a conference Twitter team to moderate and promote under-represented conference topic discussions. For instance, the *British Medical Journal* outlined guidelines for tweeting at conferences, recommending conference organizers to clearly state the social media policy for participants, advise speakers to state on their first slides whether or not they consent for Twitter use during their presentations, and to project a Twitter live-stream enabling the audience and presenters to engage in debate.⁽²¹⁾ Chan *et al.*⁽¹⁹⁾ proposes the development of three types of scholars to moderate knowledge translation on Twitter: 1) “critical clinicians” who critically appraise research; 2) “translational teachers” who assist researchers to translate new knowledge into clinical practice; and 3) “interactive investigators” who are researchers who engage with users to translate and improve the clinical application of their findings. Based on the themes identified from the questionnaire, some of the study authors will be facilitating a workshop on the use of Twitter in Geriatric Medicine education, research, and advocacy at the CGS 2018 annual meeting.

CONCLUSION

The efficacy of Twitter in complementing Geriatric Medicine conferences is supported by the growth of tweeting between #CGS2014 and #CGS2015. Future research directions include evaluating the impact of Twitter use in Geriatric Medicine on research, advocacy, and medical education, and exploring the use of Twitter on improving patient engagement and outcomes. If used appropriately, social media platforms such as Twitter can play a vital role in strengthening and expanding the Geriatric Medicine community worldwide.

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CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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