

How to make an impact in surgical research: a consensus summary from the #SoMe4Surgery community

Running title: #SoMe4Surgery consensus on research

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Abstract

Background: Understanding and interpreting medical literature through critical thinking and applying this knowledge to evidence-based practice is an integral part of surgical training. Participating in research accelerates this process, however young doctors' involvement in research may be suboptimal. Our aim was to provide young surgeons with recommendations on how to properly engage in surgical research.

Method: An online twitter conversation focused on recommendations about how a young physician can succeed in research was undertaken. Twitter activity for that conversation and hashtags were analyzed. A consensus based on the recommendations extracted from the discussion, is summarized. Key opinion leaders were engaged to promote the conversation. Discussion was opened to all participants related to surgery or surgical research, including surgeons, medical students, nurses, patients, and healthcare workers.

Results: A total of 244 participants engaged in the Twitter conversation. The highest tweeted hashtags were #SoMe4Surgery and #SurgicalResearch with 855 and 847 tweets, respectively. Themes that came out of the conversation included 'Mentorship', which was the most essential recommendation. 'International collaboratives' and 'foreign research fellowship' were also deemed important factors for a successful path in research. Additionally, routine read of online journals, use of social media for scientific purposes, often engagement in manuscript drafting and proper time management were also recommended.

Conclusion: Research is demanding and time-consuming but an essential part of surgical education. We believe that any young surgeon can have greater chances to succeed in surgical research by following our recommendations and by academically using social media platforms.

Keywords: surgical research; medical students; Young surgeons; trainee

Introduction

#SoMe4Surgery stands for Social Media for Surgery and represents the online hashtag used to connect surgeons of various qualifications from any country in order to immediately interact, disseminate knowledge, communicate and produce scholarly activity. [1] There are numerous advantages in using Social Media to conduct research as it is cost and time efficient and allows for increased scaling as it is a real-time evolving conversation. [2,3] The present study is limited by the small cluster of participants, but this is compensated by the fact that the majority showed a lively interest in the topic and provided insights into a key aspect of the medical profession: research.

In order to become competent doctors, young physicians need to properly interpret medical literature through critical thinking, apply evidence-based medicine to patient care and demonstrate a strong understanding of research methods.[4] Although scholarly activity is considered a core component of postgraduate medical education, trainee involvement in research remains suboptimal.[5] In the United States, academic surgeons' interest in research decreases in linear fashion.[6] Poor participation of trainee surgeons in research may be attributed to multiple factors although one of the potentially important reasons is the lack of proper guidance.

In this study, we aimed to explore which themes were considered to be more important to succeed in surgical research through a large-scale Social Media exercise involving Twitter.

Materials and Method

A Tweetchat using the Twitter platform was performed on 15th to 16th August 2018 using the hashtags #some4surgery and #surgicalresearch. This was promoted through the various social media platforms.

The Twitonomy application was used to analyze the impact of the Tweetchat and interrogate the data. Analytics for “#some4surgery” and “#surgicalresearch” were searched from 7 to 17th August. Twitonomy is a Twitter analytics tool that allows to monitor and to analyze Twitter interactions, including tweets, retweets, replies, mentions and hashtags.

An Excel spreadsheet report was downloaded from Twitonomy and data collected were checked, grouped and analysed. Groups of ideas were based on Tweetchat discussion and previously proposed questions (Table 1). The more useful comments were selected to be included in the results report.

This resulted into a series of recommendations for soon-to-be surgeons in order to properly get involved and have higher chances to make an impact in surgical research.

Ethical approval was not required for this study as it did not include any patient data.

Results

The Tweetchat lasted 2 days (15th and 16th August 2018) and involved 244 participants, including medical students, residents, clinical and research fellows, patients and senior academics. Most participants were from Europe (United Kingdom, Spain, Italy, Denmark, Norway, Sweden, Germany) and the United States of America. There was also smaller participation from Australasian and Latin America countries (China, Japan, South Korea, New Zealand, Australia, Brazil, Argentina, Mexico). There were a total of 1318 tweets during the study period. The hashtags #SoMe4Surgery and #SurgicalResearch were the most commonly cited with 855 and 847 tweets respectively. This can be seen in **Figures 1 and 2**. The main language was English. Data regarding top Tweeters and their respective activity in the Tweetchat were collected in **Table 2**.

The recommendations that were extracted from #SoMe4surgery conversation were as follows:

1. Mentorship

The majority of the participants urge medical graduates to find a mentor and consider it the most important factor. The mentor should be skillful, available and preferably should have excelled in surgical research. As stated by Spence et al., the role of mentorship to facilitate the research career path of a junior physician is essential, especially during the first years, when otherwise talented researchers are lost due to their inability to successfully navigate the academic and funding environment.[7]

@eliferenmd Elif EREN - "There are not enough good mentors. We can only graduate without a good mentor; we cannot be researchers. And it does not depend solely on luck, #some4surgery can provide world-wide mentor-mentee connectivity. #q6 #surgicalresearch"

@ksoreide Kjetil Søreide - "#Q4:[...] Learn from other researchers, find mentors and leaders. #SoMe4Surgery #SurgicalResearch"

@missedlungs Lucía Hernández - "@Argloannid Mentorship is essential. I would ask him/her what would you like to talk about? What kind of information you think you'd need? What would you do to get it? #Some4Surgery #surgicalresearch #Q3"

@Beccajfish Rebecca Fish "@Argloannid #SoMe4Surgery #SurgicalResearch Mentorship and guidance better than a prescribed pathway. [...] Even formal research pathways difficult to access without somebody experienced to help and guide you"

2. Collaboratives

Most commonly led by students or residents, these initiatives are a great tool for young researchers to get involved in high-quality multi-center studies. It is a great chance for young faculty to make the introductory step to research, get involved in patient enrollment according to their setting's potential, participate in protocol and manuscript drafting, learn how to acquire ethics committee approvals and connect with researchers from all around the world. Indicative of the success of these collaboratives is the EuroSurg collaborative.[8] Participating in such initiatives facilitates individual involvement into research, especially from those places with substantial barriers for taking part in research studies like centers in rural areas, low volume hospitals and centers from low- and middle-income countries.

@ksoreide Kjetil Søreide "#Q2: Very important resource! As collaborators everyone can be contributors to make research, e.g. patient recruitment, speed of trials etc becomes faster! #SoMe4Surgery #SurgicalResearch"

@dnepo Dmitri Nepogodiev "@coileainc Supporting students to intercalate in high quality groups is important [...]"

@dnepo Dmitri Nepogodiev "@mageefrcs @stefanie_hild The @GlobalSurg Collaborative (globalsurg.org) engages hundreds of surgeons in small/ rural hospitals. Crucial that everyone's input recognised with co-authorship. [...]"

@Beccajfish Rebecca Fish [...] Trainee collaboratives like @NWRCsurgery are helping with this.

3. Research Fellowship

A research fellowship can help to enhance research skills of young surgeons by facilitating them to develop technical knowledge and gain experience. Having separate time - before or after surgical training - focused in research could be a good way to develop a scientific career at the same time that surgical formation is completed. It can become a specific time, ideally under a structured program and abroad, in which quality research is encouraged. Another possible benefit from a research fellowship is a better preparation to develop a PhD thesis. Moreover, the implementation of fellowships as part of surgical training can have positive effect on patients' outcomes. [8]

@polom_karol Karol Polom "@Argloannid @me4_so #fellowship my tip is to move abroad for a longer time to learn from the best. #Q4 #SoMe4Surgery #SurgicalResearch"

4. Drafting manuscripts: From simple to more demanding articles

Article drafting skills development and experience should be understood as a continuous process; therefore, it can be started by collaborating in simple articles and case reports for then

moving into more complex research like systematic reviews, randomized-controlled trials or meta-analyses. By gaining experience on the subject, research and writing skills are polished. Lately, some journals like British Journals of Surgery offer workshops aiming for writing skills development.

@Gae_Gallo Gaetano Gallo "A step-up approach is mandatory. 1. Learn English if non-native speakers 2. know how to read and understand papers 3. understand the clinical evidence of each paper we're going to write [...]"

@drivadeneiramd David Rivadeneira @Argloannid Q3. Start small. Just start. Start writing, keep writing. Get better with the more you do. Case reports, reviews, chapters, meta-analysis. Most started with these firsts, then move on 2 bigger projects. The key is to finish what U start #SoMe4Surgery #SurgicalResearch @juliomayol

5. Social Media as an educational platform

Social media has been important to growing global networks and allowing access to surgical education across the world. Several online educational platforms and websites can be found on the internet. Some of the content that can be freely accessed includes surgical techniques videos, research guidelines and advice, and even specific communities in a particular field. An example is the colorectal surgery community and the colorectal research issues that can be found with the hashtags *#colorectalsurgery* or *#colorectalresearch* [9]. A wider new hashtag was born recently, *#SoMe4Surgery*, which helps networking surgical research and surgical practice.

@Mcfark Frank McDermott @juliomayol Yes, as others have suggested. Not just trainees. A hub for trainees, mentors and all those interested in #surgicalresearch #SoMe4surgery

@mageefrcs Mr Conor Magee FRCS @stefanie_hild Yes it can and I suspect as it develops it will be used in ways we can't imagine. The next generation who have grown up with social media will show us!! #SoMe4Surgery #SurgicalResearch #Q6

@dnepo Dmitri Nepogodiev @stefanie_hild Yes social media has been really important to growing global research networks like @EuroSurg, @GlobalSurg, @OGAAudit - just design research that everyone can get stuck in to! @ewenharrison @EwenGriffiths @drfrancescopata @GianlucaPellino #SoMe4Surgery #SurgicalResearch #Q

6. Medical journals

As part of a young surgeons' formation, it is essential to base knowledge in evidence-based medicine. By regularly reading medical journals, surgeons can stay up-to-date while an improvement of writing skills is intrinsically gained. A weekly article reading schedule could be established. A single paper read per week equals almost 52 articles per year. It can be helpful to reach access to online journals content through institution access or by subscription through

surgical societies. Another opportunity for younger researchers is online Journal Clubs, where usually articles are commented and critically explored by other researchers and experts in the field.

@mageefrcs Mr Conor Magee FRCS "This. And I may add if you are not working in a department of surgery that has regular, passionate journal clubs- find one that does! @jiw1374 @CJWWirral #SoMe4Surgery #SurgicalResearch twitter.com/Beccajfish/sta..."

7. Schedule organization

Research is time-consuming. Although in some countries a specific time during residency or medical school education is dedicated to research as part of an “academic” path, this is not always possible. In most cases, time would be obtained from personal time, which could be scarce due to the workload. Consequently, it is important to properly organize free available time.

@perbinder perbinder @lliheus There should be courses and dedicated time for you to learn research. Unfortunately, most of it is done in spare time. #SoMe4Surgery #SurgicalResearch @ronibats Ron Baticulon, MD @Argloannid We didn't have academic days off. Research usually meant taking time out of your personal time, which is not much. One would only do research bec it's required for graduation, so output often poor quality. #Some4Surgery #SurgicalResearch

8. Multidisciplinary collaboration

Patients ‘perspectives should be included in research. There are different ways to achieve it, by asking patients groups or representatives to assess a study during the design stage, by using Patient Reported Outcome Measures (PROMs) or by seeking their advice when looking for the most impactful outcomes in terms of patients view. Also working with other healthcare workers can help develop studies with better insight.

@juliomayol - We look for patients, students, nurses, residents, surgeons from any specialty, researchers and all those interested in #surgery #surgicalresearch and #surgicalpractice and invite them to join #SoMe4Surgery <https://t.co/iKr7WRHY0e>

@lliheus #surgicalresearch #some4surgery As a student nurse, I've never been given an opportunity to spend time with a research team. Why not? [...]

Nicola Dames @VBlush Patients perspective, I like to think knowledge is inseparable from experience, so my question would be, why are there still so few Patient representatives involved in research? #surgicalresearch #some4surgery

All the resulting recommendations were summarized in **Figure 3**.

Discussion

The results of the present study demonstrate the success in using a Tweetchat to engage users interested in surgical research. Using the hashtags #SoMe4Surgery and #Surgicalresearch over a 2-day period, a total of 244 participants were able to identify themes towards success in academic research. This shows the potential of online platforms to rapidly gather together members of the academic community.

Social media has revolutionized the way medical education is delivered. The 'immediacy' of contact between participants allows rapid exchange of ideas and the online delivery eliminates geographical and hierarchical constraints. The success of several hashtags, e.g. #colorectalsurgery [6], have shown the power of social media to harness expertise and bring together a surgical community.

It has been one year since #SoMe4Surgery was born (https://twitter.com/me4_so) in August 2018. Also, in August was developed the first Tweetchat used to discuss the ideas around how to improve young surgeons' involvement in surgical research. Several strong recommendations were extracted from this first Twitter streaming conversation and a deep understanding of barriers to develop a scientific career was exposed. Being this an online conversation with global participation shows that it was opened to any individual willing to contribute. Therefore, community global thinking enriches the recommendations shared in this paper.

After this period of time, #SoMe4surgery community has grown as a social media network including surgeons, physicians and patients on Twitter globally. Similar to what happened with more specific hashtags like #colorectalsurgery, which was used to unify posts on Twitter with coloproctology interest [6], #SoMe4Surgery tends to collect posts and followers around general surgery practice and surgical research having a wider public online. It had already been used in surgical conferences like 38th ESSO conference [10] demonstrating that the use of Twitter and hashtags related to a specific conference can enhance the experience of attendants.

Although there could be controversies in Twitter used during conference such as copyright or intellectual property rights infringement or misrepresentation of some of the shared non-peer review data, their use can also help to increase surgeon's activity and global interaction during a meeting.[11]

The other benefit from using this social media platform is to open surgical training and facilitating mentorship to trainee surgeons thus acting as a tool in surgical training education. This way, they can improve as researchers and acquire abilities that can help them in their future as surgeons.

Growing as part of an international community allows young surgeons to interact with other social media users, which can involve from senior surgeons and experts in a specific research field from patients or other junior colleagues. This creates the best environment to exchange ideas globally and influences the education of junior surgeons in training. Social media can help to equalize training education by facilitating access to academic journals and educative surgical platforms, improving multimedia-based communication in scientific research [12,13] and improving visualization of events, courses and congresses opportunities. Thus, all surgeons can benefit, which should allow enhanced production of high-quality research by which ultimately all patients have the potential to benefit.

However, there are some limitations in how data are collected and disseminated through Twitter. Similarly in this study, the limitation is that it only captures online conversations from the first Tweetchat for #SoMe4Surgery use, including from the previous days when the Tweetchat was announced to the day after the discussion, when some users kept the conversation for some issues alive. So, any other data around #SoMe4Surgery used was analyzed.

In conclusion, research is demanding and time consuming. We believe that any young surgeon-scientist can have higher chances to succeed in research by following one or more of our recommendations. We urge young doctors to get involved in research as early as possible in their careers.

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The authors declare they have no relevant financial interests.

Online supplement

An online list of all members of the #SoMe4Surgery online community can be found at <https://twitter.com/juliomayol/lists/some4surgery/members>

Compliance with Ethical Standards

No procedures were conducted by the authors on patients, there was no need of informed consent. This review was in agreement with the Good Clinical Practice.

Conflict of interest

The authors have no conflict of interest.

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Legends to Figures

Figure 1. Timeline of activity in terms of mentions of #some4surgery and #surgicalresearch from 7th to 17th August by Twitonomy. Tweetchat occurred on 16th August.

Figure 2. Top hashtags used and top languages according to Twitonomy analysis..

Figure 3. Action points for young researches to make an impact in surgical research

Table 1. Questions by order posted on Twitter during the Tweetchat

Number of questions	Question content Tweet
#Q1	Do you think it should be mandatory to teach research skills in medical school? Do you believe there should be guidelines/recommendations about how a young surgeon can become a successful researcher?
#Q2	What is your opinion about involving rural and community hospitals in surgical research? How can we manage it?
#Q3	When you hear a resident saying “I don’t have data/material” as an excuse for not trying to produce manuscripts, what do you respond?
#Q4	What do you think is the ideal path for a young surgeon to become a successful researcher? Research fellowship crucial? Case reports before getting involved in more complex manuscripts? Please discuss
#Q5	How can patients collaborate with researchers to push #SurgicalResearch forward?
#Q6	Can SoMe be used as a global surgical research network? How?

Table 2. Top Tweeters by influence, engagement and activeness and their activity measured in followers, mentions, retweets and likes on Twitter from 7th to 17th August. Source: Twitonomy

	Tweeter	Followers	Mentions	Retweets	Favorites
Most influential users	@drheatherfurnas	154879	1		
	@NeilFlochMD	132212	2		
	@KellieRoseWick	25494	1		
	@DrUmeshPrabhu	23966	1		
	@sminaev2015	23117	25	3	5
	@juliomayol	22988	147	298	486
	@BJSurgery	16738	3	15	9
	@TomVargheseJr	14485	1		
	@mjoehlerich	14368	1		
	@LoggheMD	14355	1		
Most engaging users	@juliomayol	22988	147	298	486
	@dnepo	1393	34	70	187
	@ProfW_edinsurg	2443	11	42	135
	@perbinder	1256	79	40	135
	@ArgIoannid	267	28	40	107
	@Beccajfish	341	21	38	104
	@stefanie_hild	318	50	28	94
	@Iliheus	115	4	26	73
	@VBlush	6386	20	27	58
	@mageefrcs	522	8	15	54
Most active users	@juliomayol	22988	147	298	486
	@SWexner	10035	101		
	@me4_so	315	87	6	14
	@perbinder	1256	79	40	135
	@ProfDemartines	371	69	5	42
	@stefanie_hild	318	50	28	94
	@dnepo	1393	34	70	187
	@CelestinoGutirr	7153	31	1	4
	@ArgIoannid	267	28	40	107
	@Gae_Gallo	535	28	3	21