

## CANADIAN JOURNAL of EMERGENCY NURSING

### JOURNAL CANADIEN des INFIRMIÈRES D'URGENCE

THE OFFICIAL JOURNAL OF THE NATIONAL EMERGENCY NURSES' ASSOCIATION

www.NENA.ca www.CJEN.ca

# Use of social media and Free Open Access Medicine (FOAM) for continuing education in emergency nursing: A scoping review

Francis P. Tenorio<sup>1</sup>, Emma Siegmund<sup>1</sup>, Rebecca Oxland<sup>1</sup>, Jonathan Sherbino<sup>2,3</sup>, and Teresa M. Chan<sup>2,3,4</sup>

Corresponding/First Author: Francis P. Tenorio, MSc, RN, ENC(C), St. Paul's Hospital, Providence Health Care; ftenorio@providencehealth.bc.ca

#### **Abstract**

Introduction: Emergency nurses are responsible for ensuring that they have up-to-date knowledge and skills to deal with any situation that may present in clinical practice. As an emerging trend for learners to obtain and discuss evidence-based medical education, social media, Free Open Access Medical education (FOAM) and Free Open Access Nursing education (FOAN) could be used for continuing education in emergency nursing. This scoping review aims to discover what is known about social media and FOAM in continuous emergency nursing education.

**Methods:** This scoping review was guided by Arksey and O'Malley's framework for scoping reviews and checked against the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – Extension for Scoping Reviews (PRISMA-ScR). A database search was performed on papers that discussed social media or FOAM in the context of continuing education in either general or emergency nursing published in any year.

**Results:** Of the 369 records screened, 12 papers were reviewed. Of these, 58% of papers were from either Canada or the United States, 67% of papers were published in 2016 or after, and 50% were conceptual in

nature. Two major categories these papers focused on were how social media was used, and the limitations of using social media for continuing education.

**Discussion**: The current state of literature is limited in describing the use of social media with continuing education, specifically in emergency nursing. Rather than as a primary educational intervention, social media has been used to enhance other educational strategies or as in-the-moment forms of learning. Studies that utilized social media showed favourability to its use, but there were often challenges to the methodology of these studies.

**Conclusion**: Although the literature on social media in emergency and general nursing literature is growing, it is superficial and broad. More studies are needed to see the overall effects of social media in continuing education in emergency nursing.

*Keywords:* continuing education, emergency nursing, nursing education, social media.

#### Introduction

mergency department (ED) nurses are expected to manage the care of patients with diverse health needs and ailments across the clinical spectrum. Nurses may have

<sup>&</sup>lt;sup>1</sup>St. Paul's Hospital, Providence Health Care

<sup>&</sup>lt;sup>2</sup>Department of Medicine, McMaster University

<sup>&</sup>lt;sup>3</sup>McMaster Education Research, Innovation, and Theory (MERIT) program, Faculty of Health Sciences, McMaster University

<sup>&</sup>lt;sup>4</sup>School of Medicine, Toronto Metropolitan University

to deal with cardiac emergencies, pediatric presentations, mental health crises, or complex geriatric care on any given shift. Consequently, nurses must possess up-to-date knowledge and skills to deal with each of these presentations as they arrive in the ED. Competing educational interests and the demand for current, evidence-based knowledge challenges emergency nurses to engage in continuing education activities to remain competent in their practice, as required by all nursing regulatory bodies in Canada (Valdez, 2009).

Entry-to-practice educational requirements for emergency nursing are largely varied and may not necessarily include advanced post-baccalaureate education (Jones et al., 2015). Historically, emergency nurses utilized continuing education strategies to ensure they had the required knowledge and skills to work in emergency departments (Schriver et al., 2003). Although many emergency departments now offer a comprehensive onboarding-to-practice program, continuous learning opportunities are still mandated to ensure that staff are up-to-date and familiarized with current practices crucial to positive patient outcomes (Canadian Nurses Association, 2004; Schriver et al., 2003). Most approaches for continuing education include didactic face-to-face instruction and interval-based accredited courses, such as Advanced Cardiac Life Support (ACLS; Allen et al., 2013; Koota et al., 2018).

Obtaining effective emergency education is challenged by several factors. First, practice standards for emergency nursing vary between hospitals, regions, and countries, so the needs of one particular group of nurses may be substantially different from others (Jones et al., 2015). For example, management of patients on mechanical ventilation is a competency for a sizeable minority of emergency nurses in the United States (Rose & Ramagnano, 2013). Second, there is tremendous variability in the clinical procedures and tasks that ED nurses may see daily. For example, critical care tasks such as chest tube management and cardioversion are performed far less often and amongst fewer nurses than venipuncture and wound care management (Dağ et al., 2019; McCarthy et al., 2013). Within emergency nursing, these high-acuity, low-opportunity (HALO) procedures are prone to the effects of knowledge and skill decay without additional practice or educational refreshers (Kardong-Edgren et al., 2019). Third, numerous barriers limit nursing action to educational opportunities. Factors such as cost of education, time away from work, lack of funding, nursing shortages, and lack of access to in-person offerings can reduce engagement with educational opportunities (Laflamme & Hyrkas, 2020; Nalle et al., 2010; Wolf & Delao, 2013). For example, rural settings may not have qualified facilitators or resources to provide education. More recently, the COVID-19 pandemic has limited the availability and ability to attend in-person educational activities (Weiss et al., 2021).

Given the challenges in obtaining continuing emergency nursing education, there is a need for educational strategies that can be individually targeted and easily accessible to emergency nurses. Social media is one strategy that is becoming more accepted in nursing education. YouTube videos, for example, are self-reported to be integral to nursing students' education as much as textbooks and offline media have been previously (Duke et al., 2017; Montayre & Sparks, 2018). Social media learning aligns

with constructivist principles, as learners are utilizing resources that meet their specific needs and preferences (Flynn et al., 2015). Furthermore, learners who choose to engage in social media discourse can reflect on previous experiences and link them to the topic being discussed (Mbati, 2013). However, generational differences between students and faculty, distrust of social media platforms due to privacy concerns, and the risk of accessing erroneous content has led to challenges in adopting social media in the health professions community (Duke et al., 2017; Gooding & Swift, 2019).

One such strategy increasingly used by physicians in the emergency medicine community is Free Open Access Medical education (FOAM or FOAMed). FOAM is an encompassing term that refers to current, open-access and evidence-based medical education generated by and freely available online to the healthcare professional community (Nickson & Cadogan, 2014). While FOAM is primarily known for disseminating free and open-access medical education content over social media platforms, it also involves engaging researchers, educators, and clinicians to use these materials to improve patient care through critical discussions and sharing experiences (Chan et al., 2020). Free Open Access Nursing education (FOAN or FOANed) is a similar movement that focuses on materials relevant to nursing practice and on the online collaboration of nurses (Stevens & Nies, 2018). For the purpose of this paper, our discussion on the use of FOAM will be inclusive of FOAN resources, considering their similar paradigms.

The variety of FOAM content covers the spectrum of pathophysiology, evidence-based interventions, and skill development - many of which align with the emergency nurses' learning needs. There is also utility amongst emergency nurses due to the blurring of roles and tasks between physicians and nurses who work in emergency departments (Brook & Crouch, 2004). For example, simple suturing is a procedure that may be within the scope of emergency nurses in specific jurisdictions (Middleton, 2006). Despite that, it is not well established how FOAM can be utilized as a part of a continuing education strategy in emergency nursing. There is growing literature over the past decade on FOAM in emergency medicine, but the body of literature within nursing – let alone emergency nursing – is much smaller (Chan et al., 2020). While there have been many literature reviews on the use of social media in the undergraduate nursing student population, to our knowledge there are no previous scoping or systematic reviews conducted on FOAM in emergency nursing continuing education. While there have been unstructured literature reviews on the use of social media in the undergraduate nursing student population, to our knowledge there are no scoping or systematic reviews conducted on FOAM in the context of emergency nursing continuing education. Our scoping review was conducted to summarize what is currently known about social media and FOAM in the context of emergency nursing education.

#### **Methods**

A scoping review has been chosen for this study as the literature on this topic is relatively small and recent. Grant and Booth (2009) describe scoping reviews as "a preliminary assessment

of the potential size and scope of the available research literature" (p.101) without the rigorous quality assessment associated with a systematic review. They are particularly useful for areas of emerging research with a lack of high-quality research studies (Levac et al., 2010). As our research questions aim to answer what is known within the growing field of social media, FOAM, and emergency nursing, the methodology of the scoping review best aligns with the aims of our study.

The methodology for this scoping review is informed by the framework proposed by Arksey and O'Malley (2005). In their framework, the scoping review is divided into five stages that parallel the process used to conduct a systematic review: (1) identifying the research questions; (2) identifying relevant studies; (3) selecting studies; (4) charting and documenting the data; and (5) summarizing and reporting the results. The remaining sections of the methods will be structured per the first four components of Arksey and O'Malley's (2005) framework; the last component will be covered in the results. This scoping review will be checked against the Preferred Reporting Items for Systematic Reviews and Meta-Analyses - Extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018). The PRISMA-ScR contains 20 items that should be reported with the scoping review, so that readers can assess the quality of the review. The checklist pertinent to this review is available in Appendix A. A protocol for this review was not published previously.

#### Identifying the research questions

As there is an increase in social media being used for nursing education, and there is a substantial amount of FOAM resources geared towards emergency medicine, this scoping review aims to answer the following questions:

- 1. How is social media, FOAM, and FOAN used in continuing education for emergency nurses?
- 2. What challenges are there to adopting social media, FOAM, and FOAN in continuing education for emergency nurses?

#### Identifying relevant studies

Search strategy

A comprehensive literature search was performed in the MEDLINE, CINAHL, and ProQuest Web of Science databases in May 2021 and May 2023. A preliminary search was also performed on EMBASE Conference Proceedings and ProQuest Dissertations and Theses Database (PQDT), but no relevant papers were discovered on these databases. The search strategy looked for any academic or scientific papers that involved our population (emergency nurses), concept (usage of social media, FOAM, or FOAN) and context (continuing education or professional development). A trained medical librarian peer-reviewed the final search strategy that was used, based on our target population and previous literature reviews on social media in the education of healthcare professionals. Google Scholar was used to help corroborate our search strategy by mapping the first 200 citations with known papers that met inclusion criteria. The search strategy is available in Appendix B. After obtaining the initial set of included papers, a search of the references from each paper was completed to identify other relevant works.

#### Study eligibility

Any scientific paper that discusses the use of social media, FOAM, or FOAN for continuing education in emergency

nursing or general nursing was included. The educational intervention must have been open-access and freely accessible. Both emergency nursing and general nursing were included, as many topics in general nursing overlap within the emergency nursing domain. There was no restriction to the type of publication, language of publication, setting of paper, or date of publication. If papers were not available in English, the paper was translated using Google Translate. Papers that discussed social media, FOAM, or FOAN in the context of undergraduate medical or nursing education were excluded, as we were focused on continuing education and professional development. These inclusion and exclusion criteria are summarized in Table 1.

**Table 1** *Inclusion and Exclusion Criteria* 

	Inclusion	Exclusion
Population	Nurses (excluding nursing students)	All other health care professionals and nursing students
Concept	Discusses FOAM, FOAN, or social media education	Discusses education strategies that are neither free nor open-access
Context	Discusses continuing education or professional development	Does not discuss education at all
Type of Literature	Any scientific paper	
Language of Publication	Any language	
Country of Publication	Any country	
Date of Publication	Any date	

#### **Selecting studies**

Data from the literature search was captured in the reference management software Zotero and then exported to Covidence software, which all reviewers were trained on how to use. Three researchers (FT, RO, ES) reviewed the papers captured by the literature search. The inclusion and exclusion criteria were refined once after an initial review of fifty items to ensure a broad capture of papers for review. Each item was randomly assigned to two of the researchers who screened titles and abstracts based on the full study eligibility criteria. Duplicate items were removed automatically by Covidence software and manually by reviewers. For any conflict, such as uncertainty on inclusion and exclusion criteria, the third researcher resolved any uncertainties

or disagreements. Cohen's kappa ( $\kappa$ ) was used to assess interrater agreement, and deliberation on initial study selection was completed with  $\kappa=0.91$ . After the initial study screening, papers that met initial eligibility criteria underwent a full-text review for further screening of eligibility criteria and data collection by the same researchers who performed the initial screen.

#### Charting and documenting the data

Three researchers (FT, RO, ES) worked together to do the data extraction. Each paper was randomly assigned to two of the researchers to code the data; if required, the third researcher was brought in to resolve any disagreements. Data collection was completed using a standardized data collection form created in Google Forms (see Appendix C). Data entered in the form was stored in Google Sheets. Data extraction items included bibliographic information (article title, type of publication, year of publication, country of first author) and article information relevant to the research questions. As it is not required for a scoping review, a formal quality assessment for each paper was not conducted. The same researchers iteratively coded and categorized the data based on the initial research questions. When applicable, the type of scholarship (description, justification, and clarification) of the study is identified as per Cook, Bordage, and Schmidt's framework for classifying medical education research (Cook et al., 2008).

#### **Results**

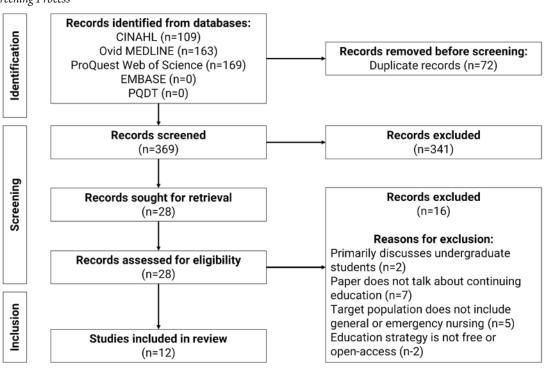
The literature search retrieved 441 potential citations. After filtering for duplicate reviews, there were 369 records that were screened and 28 records that were included for full-text analysis.

Eighteen additional papers were reviewed following a snowball search of the references in all included papers. However, none of these papers met inclusion criteria. See Figure 1 for a flow diagram of the search process.

#### **Study information**

Twelve papers met inclusion criteria and were analyzed for this review. The majority of the included papers were from primarily English-speaking countries including Australia (n = 1, 8%), Canada (n = 1, 8%), United Kingdom (n = 2, 17%), and the United States (n = 6, 50%), with one study each from Brazil and Saudi Arabia. All papers were written or available in English. Nearly all of the identified papers and studies (n = 10) were situated from the general nursing context; only two papers were within the emergency nursing context (Bakhsh & Perona, 2019; Hernandez et al., 2019). The majority of papers (n = 8) were published in or after 2016 (Almeida et al., 2018; Bakhsh & Perona, 2019; De Sousa et al., 2018; Hernandez et al., 2019; Jackson, 2017; Pilcher & Harper, 2016; Pizzuti et al., 2020; Reinbeck & Antonacci, 2019). The majority of papers (n = 7) were largely conceptual in nature and talked about how social media or a specific social media platform could be used for education (Almeida et al., 2018; Billings, 2009; Bristol, 2010; Moorley & Chinn, 2015; Pilcher & Harper, 2016; Reinbeck & Antonacci, 2019; Wilson et al., 2014). The remaining papers discussed either an intervention or survey with respect to social media (Bakhsh & Perona, 2019; De Sousa et al., 2018; Hernandez et al., 2019; Jackson, 2017; Pizzuti et al., 2020). Those that described an intervention were largely justification-type studies (Bakhsh & Perona, 2019; De Sousa et al., 2018; Hernandez et al., 2019).

**Figure 1**Article Screening Process



**Table 2**Summary of Studies Included in Scoping Review

Author	Year Published	Country of First Author	Type of Paper	Social Media Platforms Discussed	Study Design	Use of Social Media in Continuing Education
Almeida et al.	2018	Brazil	Review	Blogs <sup>a</sup>	Not applicable.	Other than noting that blogs can be used, there are no details on its effectiveness or impact.
Bakhsh & Perona	2019	Saudi Arabia	Justification Study	YouTube <sup>b</sup>	Population: emergency department staff. Retrospective chart review. The authors were reviewing the outcomes of an educational intervention to decrease ondansetron usage using a combination of YouTube videos, posters, and one-one discussions.	The combination of educational interventions (including the YouTube video) did have an impact, but it's unclear what the relative effect of YouTube was on the outcome.
Billings	2009	United States	Conceptual	Blogs, Wikis <sup>c</sup>	Not applicable.	Examples are provided on how blogs and wikis can be used for continuing education, but no details on their effectiveness are provided. Authors warn of potential patient confidentiality concerns.
Bristol	2010	United States	Conceptual	Twitter <sup>d</sup>	Not applicable.	Examples are provided of how Twitter can be used for education, but no details on its effectiveness or impact are provided. Authors warn of potential patient confidentiality concerns.
De Sousa et al.	2018	Canada	Justification Study	Facebook <sup>e</sup> , Instagram <sup>f</sup>	Population: hospital nurses. N = 60 (post-intervention) Evaluative survey on hypoglycemia management before and after educational interventions were provided on social media (Facebook, Instagram) and in-person. Facebook views of the educational intervention were also assessed.	There was no significant increase to nursing knowledge with the use of social media. It was also noted that viewing of the educational intervention on social media decreased over time.
Hernandez et al.	2019	United States	Justification Study	YouTube	Population: emergency nurses.  N = 37 (post-intervention) Survey on STEMI identification pre- and post-educational intervention that used a combination of a free continuing-education platform and material delivered on YouTube.	Use of educational interventions were subjectively well-received by nursing and there was an increase in post-intervention knowledge scores (from 7.53/10 to 9.11/10).

Jackson	2017	United Kingdom	Descriptive	Facebook, Instagram, Twitter	Population: hospital nurses. Description of an educational intervention to use images on various social media platforms to increase mobilization of in-hospital patients.	Front-line nurses reported seeing the images and had positive attitudes to the intervention, but no further details on effectiveness were reported. The authors describe the intervention as simple to use and cost-effective.
Moorley & Chinn	2015	United Kingdom	Conceptual	Blogs, Facebook, Twitter, YouTube	Not applicable.	Examples are provided on how social media could be used for professional devel- opment, but no details on its effectiveness are provided.
Pilcher & Harper	2016	United States	Conceptual	Facebook, Twitter, Pinterest <sup>g</sup>	Not applicable.	Examples are provided on how social media could be used for professional development. They do note that social media currently is used to "augment educational activities" and that there is limited research to guide users on how it could be used. Authors warn of potential patient confidentiality concerns.
Pizzuti et al.	2020	United States	Descriptive	None specifically	Population: healthcare professionals N = 1113 (nursing only), 1644 (total) Survey of healthcare professionals on social media, with questions specifically targeting education.	85.8% of nurses are favourable to using social media for educational purposes, usually as recipient rather than creator.
Reinbeck & Antonacci	2019	United States	Conceptual	Blogs, Facebook, LinkedIn <sup>h</sup> , Twitter, YouTube	Not applicable.	Examples are provided on how social media could be used, but no details on its effectiveness are provided. Authors warn of potential patient confidentiality concerns.
Wilson et al.	2014	Australia	Conceptual	Twitter	Not applicable.	The authors note that social media can provide nurses with quick access to educational material, but that nurses are often not taught to navigate the social media landscape. Authors warn of potential patient confidentiality concerns.

<sup>&</sup>lt;sup>a</sup> Blogs are websites where information (such as photos, videos, or text) can be shared, typically focusing on a particular subject or topic.

<sup>&</sup>lt;sup>b</sup> YouTube is an online platform for sharing videos.

<sup>&</sup>lt;sup>c</sup>Wikis are an online database of information where content is created, edited, and managed by a group of users.

<sup>&</sup>lt;sup>d</sup> Twitter is an online platform where users can publicly post images, videos, and brief snippets of texts, usually about current or real-time events. In July 2023, Twitter was renamed to X. As this occurred after our literature search and analysis, this paper will continue to refer to this platform as Twitter.

<sup>&</sup>lt;sup>e</sup> Facebook is an online platform where users can post images, videos, and texts to either the public, to user-designated "friends" or within common-interest groups.

<sup>&</sup>lt;sup>f</sup> Instagram is an online platform for sharing photos and videos.

<sup>&</sup>lt;sup>g</sup> Pinterest is an online platform for sharing images and videos found on other websites or social media platforms.

<sup>&</sup>lt;sup>h</sup> LinkedIn is an online platform used primarily for professional networking, though users can also share photos, videos, and texts to other members.

Of the social media platforms that were identified, Facebook (De Sousa et al., 2018; Jackson, 2017; Moorley & Chinn, 2015; Pilcher & Harper, 2016; Reinbeck & Antonacci, 2019), Twitter (Bristol, 2010; Jackson, 2017; Moorley & Chinn, 2015; Pilcher & Harper, 2016; Reinbeck & Antonacci, 2019; Wilson et al., 2014), and YouTube (Bakhsh & Perona, 2019; Hernandez et al., 2019; Moorley & Chinn, 2015; Reinbeck & Antonacci, 2019) had the most mentions. Neither FOAM nor FOAN was explicitly mentioned in any of the included papers that were targeted to nursing. All studies that were included are summarized in Table 2.

The use of social media in nursing continuing education has largely been, as Pilcher and Harper describe, to "augment educational activities" rather than as primary educational interventions (Pilcher & Harper, 2016). The use of hashtags on Twitter, for example, allows nurses to selectively choose topics they find relevant at the moment (Bristol, 2010; Moorley & Chinn, 2015; Pilcher & Harper, 2016; Reinbeck & Antonacci, 2019; Wilson et al., 2014). Access to social media in the clinical setting can provide users with quick access to practical material in the moment (Wilson et al., 2014). Unlike other offline activities, social media provides nurses with the opportunity to engage in educational discourse with other healthcare professionals (Almeida et al., 2018; Billings, 2009; Bristol, 2010; Moorley & Chinn, 2015; Pilcher & Harper, 2016; Reinbeck & Antonacci, 2019; Wilson et al., 2014). These opportunities give nurses agency to begin the conversation, rather than simply be receivers of healthcare education.

The focus of most conceptual papers reviewed was on describing what a particular social media platform was, how the platform was used, and specific cases that demonstrate how nurses could use that social media platform. Discussions of social media are largely favourable for the specific instances they describe, with caution to navigating the social media landscape and avoiding the pitfalls of privacy breaches. Only two papers in this review discussed a more general or systematic approach to utilizing social media for continuing education (Pilcher & Harper, 2016; Wilson et al., 2014).

Only one paper in the literature reviewed examined the perceptions of nurses with regards to social media in continuing education (Pizzuti et al., 2020). They identified that amongst nurses, Facebook and Pinterest were the platforms most often used for educational purposes. Within that population, approximately 85.8% of nurses were favourable to using social media for educational purposes with 40.5% having done so already. However, the usage of social media for education was largely passive with no direct involvement of nurses in the creation of the material or discussion of the results on social media posts.

When social media was used as an educational intervention, its usage was limited to a single educational topic such as usage of antiemetics with opioids, management of hypoglycemia, identification of ST elevation on cardiac ECG, or best practices on early mobilization (Bakhsh & Perona, 2019; De Sousa et al., 2018; Hernandez et al., 2019; Jackson, 2017). The use of social media in these studies was largely favourable, with respondents marking ease-of-access and visibility of intervention highly. However, these studies also described numerous challenges

to measuring the effects of social media on learning as it was difficult to measure participation by the study population and difficult to link learning outcomes to the social media activity. The use of YouTube videos in one study, for example, was supplemented by other in-person educational activities such as posters and one-on-one discussion (Bakhsh & Perona, 2019). In another study involving Facebook and Instagram posts, viewership of the educational material progressively declined over time (De Sousa et al., 2018).

#### Limitations of social media in continuing education

All papers described some form of challenge or barrier in the update of social media as part of a continuing education strategy. The most often described challenge is the caution nurses need to take to maintain patient privacy and confidentiality (Billings, 2009; Bristol, 2010; Pilcher & Harper, 2016; Wilson et al., 2014). The ramifications of confidentiality and privacy breaches in social media can result in the dismissal of the employee (Reinbeck & Antonacci, 2019). Several jurisdictions have begun to create policies and guidelines to guide nurses and other healthcare professionals to ensure privacy and confidentiality is maintained (Pilcher & Harper, 2016; Wilson et al., 2014).

Nurses are also cautioned to ensure that the content they are reviewing on social media is accurate and legitimate. Digital literacy is often not part of undergraduate nursing education, yet is important in navigating the overwhelming number of social media posts available (Wilson et al., 2014). Since social media platforms are open-access, educational content may often be mired by unsubstantiated, "popular" thought or content posted by scam accounts. However, the discussion or comments section of social media posts are largely open and visible to everyone, allowing for an informal method of peer review to occur (Moorley & Chinn, 2015).

#### **Discussion**

The aim of this scoping review was to summarize what was known about social media and FOAM in the context of emergency nursing education and we found that there was limited information about this in the current literature. The majority of papers were descriptive or conceptual and describe the usage of social media at a superficial level. The number of research papers that utilized social media as an educational intervention were lacking, and of those that did it was unclear if there were better assessment scores because of social media. However, this was contrasted with favourability amongst participants in engaging with and using the social media platform for education.

Unlike earlier discussions in the health professions literature on social media that were primarily descriptive of the platform, there are more papers over the last decade that describe general strategies to engage with social media (Thoma et al., 2014). Of note, the emergency medicine literature has readily adopted the usage of FOAM and there are an increasing number of papers that discuss frameworks that underpin the usage of social media and FOAM in education (Chan et al., 2018). These frameworks provide general direction for users to effectively obtain FOAM resources and to engage with other members of the FOAM community. There are also a growing number of tools for providers to critically appraise the content

of FOAM resources such as the ALiEM AIR score and the rMETRIQ score (Chan et al., 2019). Conversely, our current scoping review discovered no usage of FOAM or FOAN in continuing nursing education. Several papers, however, discussed the growing community of smaller social media networks dedicated to medical and nursing education without explicitly utilizing FOAM or FOAN terminologies (Moorley & Chinn, 2015; Pilcher & Harper, 2016; Wilson et al., 2014). This might parallel the start of FOAM in the emergency medicine literature: adopted first by a small number of FOAM practitioners before becoming formalized and legitimized by organizations and end users (Chan et al., 2020).

Given the growing field of social media and FOAM research in emergency medicine, a similar growth could exist within emergency nursing. However, further understanding is required on why nurses are not currently engaging in FOAM and FOAN resources. By far, more papers specifically targeting emergency nursing, or a collaboration between emergency nursing and medicine, are required. The vast majority of papers in the current scoping review are from the general nursing perspective and while there is significant overlap in the scope of both emergency and general nursing, the nuances of emergency nursing specific competencies may possess interesting implications for social media education. This may include more descriptive studies of the emergency nurse that would be useful in gaining insight in how social media is used or can be used in that population. Finally, more justification and clarification studies are needed to help strengthen the evidence that social media can be a viable continuing education approach.

#### **Limitations**

As the body of literature is growing and the terminologies relevant to social media are not standardized, citations may have been missed or excluded during the literature search. Attempts to mitigate this include having a medical librarian peer-review the search, reviewing other similar reviews on social media for appropriate search terms to use, corroborating our database search with Google Scholar, and ensuring a high inter-rater reliability  $\kappa$  during the initial screening process. In order to include as many papers as possible, no assessment of quality was performed. However, as this scoping review was conducted to determine the breadth of knowledge regarding social media and FOAM in emergency nursing, the lack of a formal quality assessment was deemed appropriate.

#### Conclusion

The discussion of social media in the emergency and general nursing literature is growing, but is currently superficial and sparse. Despite a parallel growth of FOAM in emergency medicine literature, there was no discussion on the topic within the nursing literature. Although usage of social media as an educational activity was largely positive, more studies are needed to see the effects of social media on knowledge acquisition. The current literature is generally favourable of social media being used for educational purposes and so we hope that future research can look into the barriers to adopt FOAM, FOAN, and social media in continuing education.

#### Implications for emergency nursing practice

- 1. Emergency nurses are expected to be up to date with the knowledge and skills they use in their practice.
- Social media and Free Open Access Medicine/Nursing education (FOAM/FOAN) are a viable option for many emergency department nurses as there are little barriers to access and encompass a wide range of topics.
- 3. Despite a growing amount of research amongst the use of social media in emergency medicine, there is a lack of research in emergency nursing and more studies are required to determine the effects of social media in knowledge acquisition and the best ways to use social media for continuing education amongst emergency nurses.

#### **About the Authors**

Francis P. Tenorio, MSc, RN, ENC(C), St. Paul's Hospital, Providence Health Care; ftenorio@providencehealth.bc.ca; ORCID: 0009-0004-8829-496X

Emma Siegmund, BSN, RN, St. Paul's Hospital, Providence Health Care

Rebecca Oxland, BSN, RN, St. Paul's Hospital, Providence Health Care

Jonathan Sherbino MD MEd, Professor, Department of Medicine, McMaster University; Assistant Dean, McMaster Education Research, Innovation, and Theory (MERIT) program, Faculty of Health Sciences, McMaster University

Teresa M. Chan MD FRCPC MHPE MBA, Dean (School of Medicine) & Vice-President (Medical Affairs), School of Medicine, Toronto Metropolitan University; Clinical Associate Professor, Department of Medicine, McMaster University; Adjunct Clinician Scientist, McMaster Education Research, Innovation, and Theory (MERIT) program, Faculty of Health Sciences, McMaster University; ORCID: 0000-0001-6104-462X

#### **Acknowledgements**

None reported.

#### **Conflicts of interest**

None reported.

#### Funding

None reported.

# Contributions of the authorship team & CRedIT author statement

Francis Tenorio: conceptualization, methodology, investigation, data curation, writing – original draft, writing – review & editing, visualization, project administration. Emma Siegmund: investigation, validation, data curation, writing – original draft, writing – review & editing. Rebecca Oxland: investigation, validation, writing – original draft. Jonathan Sherbino: writing – original draft, writing – review & editing, supervision. Teresa Chan: conceptualization, methodology, writing – original draft, writing – review & editing, supervision.

- Allen, J. A., Currey, J., & Considine, J. (2013). Annual resuscitation competency assessments: A review of the evidence. *Australian Critical Care*, 26(1), 12–17. https://doi.org/10.1016/j.aucc.2012.07.001
- Almeida, B. de L. O. da S., Christovam, B. P., & Correia, D. M. da S. (2018). Blog of use as continuing education strategy in nursing: An integrative review of literature. *Enfermería Global*, 17(49), 500–528. https://doi.org/10.6018/eglobal.17.1.277841
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616
- Bakhsh, H. T., & Perona, S. J. (2019). Medical and nursing staff education reduces use of prophylactic ondansetron with opioids in the emergency department. *Journal of Emergency Nursing*, 45(3), 273–277. https://doi.org/10.1016/j.jen.2018.07.011
- Billings, D. M. (2009). Wikis and blogs: Consider the possibilities for continuing nursing education. *The Journal of Continuing Education in Nursing*, 40(12), 534–535. https://doi.org/10.3928/00220124-20091119-10
- Bristol, T. J. (2010). Twitter: Consider the possibilities for continuing nursing education. *The Journal of Continuing Education in Nursing*, 41(5), 199–200. https://doi.org/10.3928/00220124-20100423-09
- Brook, S., & Crouch, R. (2004). Doctors and nurses in emergency care: Where are the boundaries now? Trauma, 6(3), 211-216. https://doi.org/10.1191/1460408604ta316oa
- Canadian Nurses Association. (2004). Promoting continuing competence for registered nurses [position statement]. https://www.cna-aiic.ca/en/policy-advocacy/policy-support-tools/position-statements
- Chan, T. M., Bhalerao, A., Thoma, B., Trueger, N. S., & Grock, A. (2019). Thinking critically about appraising FOAM. *AEM Education and Training*, 3(4), 398–402. https://doi.org/10.1002/aet2.10352
- Chan, T. M., Stehman, C., Gottlieb, M., & Thoma, B. (2020). A short history of free open access medical education. The past, present, and future. *ATS Scholar*, 1(2), 87–100. https://doi.org/10.34197/ats-scholar.2020-0014PS
- Chan, T. M., Trueger, N. S., Roland, D., & Thoma, B. (2018). Evidence-based medicine in the era of social media: Scholarly engagement through participation and online interaction. *Canadian Journal of Emergency Medicine*, 20(1), 3–8. https://doi.org/10.1017/cem.2016.407
- Cook, D. A., Bordage, G., & Schmidt, H. G. (2008). Description, justification and clarification: A framework for classifying the purposes of research in medical education. *Medical Education*, 42(2), 128–133. https://doi.org/10.1111/j.1365-2923.2007.02974.x
- Dağ, G. S., Bişkin, S., & Gözkaya, M. (2019). Determination of nursing procedures and competencies in emergency departments: A cross-sectional study. Nursing & Health Sciences, 21(3), 307–315. https://doi.org/10.1111/nhs.12598
- De Sousa, F., Jackson, J., Knight, R., Cloutier, E., Basa, R., Fourney, A., & Devecseri, K. (2018). A social media intervention to improve hypoglycemia management at a multicenter hospital: A quality improvement pilot for clinical nurses. *Contemporary Nurse*, 54(1), 44–51. https://doi.org/10.1080/10376178.2018.1440180
- Duke, V. J. A., Anstey, A., Carter, S., Gosse, N., Hutchens, K. M., & Marsh, J. A. (2017). Social media in nurse education: Utilization and E-professionalism. *Nurse Education Today*, 57, 8–13. https://doi.org/10.1016/j.nedt.2017.06.009
- Flynn, L., Jalali, A., & Moreau, K. A. (2015). Learning theory and its application to the use of social media in medical education. *Postgraduate Medical Journal*, 91(1080), 556–560. https://doi.org/10.1136/postgradmedj-2015-133358

- Gooding, D., & Swift, A. (2019). Use of social media to support student nurses: An EBN Twitter chat led by Daniel Gooding and Alison Twycross. *Evidence-Based Nursing*, 22(1), 3–6. https://doi. org/10.1136/ebnurs-2018-103043
- Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x
- Hernandez, J. M., Glembocki, M. M., & McCoy, M. A. (2019). Increasing nursing knowledge of ST-elevated myocardial infarction recognition on 12-lead electrocardiograms to improve patient outcomes. *The Journal of Continuing Education in Nursing*, 50(10), 475–480. https://doi.org/10.3928/00220124-20190917-10
- Jackson, J. (2017). Using social media to support clinical education. Journal of Continuing Education in Nursing, 48(12), 541–542. https://doi.org/10.3928/00220124-20171115-04
- Jones, T., Shaban, R. Z., & Creedy, D. K. (2015). Practice standards for emergency nursing: An international review. Australasian Emergency Nursing Journal, 18(4), 190–203. https://doi. org/10.1016/j.aenj.2015.08.002
- Kardong-Edgren, S., Oermann, M. H., & Rizzolo, M. A. (2019). Emerging theories influencing the teaching of clinical nursing skills. *Journal of Continuing Education in Nursing*, 50(6), 257–262. https://doi.org/10.3928/00220124-20190516-05
- Koota, E., Kääriäinen, M., & Melender, H.-L. (2018). Educational interventions promoting evidence-based practice among emergency nurses: A systematic review. *International Emergency Nursing*, 41, 51–58. https://doi.org/10.1016/j.ienj.2018.06.004
- Laflamme, J., & Hyrkas, K. (2020). New graduate orientation evaluation: Are there any best practices out there?: A scoping review. *Journal for Nurses in Professional Development*, 36(4), 199–212. https://doi.org/10.1097/NND.0000000000000642
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *S*(1), 69. https://doi.org/10.1186/1748-5908-5-69
- Mbati, L. (2013). Online social media applications for constructivism and observational learning. *The International Review of Research in Open and Distributed Learning*, 14(5). https://www.learntechlib.org/p/171471/
- McCarthy, G., Cornally, N., O'Mahoney, C., White, G., & Weathers, E. (2013). Emergency nurses: Procedures performed and competence in practice. *International Emergency Nursing*, 21(1), 50–57. https://doi.org/10.1016/j.ienj.2012.01.003
- Middleton, R. (2006). Suturing as an advanced skill for registered nurses in the emergency department. *The Australian Journal of Rural Health*, 14(6), 258–262. https://doi.org/10.1111/j.1440-1584.2006.00826.x
- Montayre, J., & Sparks, T. (2018). As I haven't seen a T-cell, video-streaming helps: Nursing students' preference towards online learning materials for biosciences. *Collegian*, 25(5), 487–492. https://doi.org/10.1016/j.colegn.2017.12.001
- Moorley, C., & Chinn, T. (2015). Using social media for continuous professional development. *Journal of Advanced Nursing*, 71(4), 713–717. https://doi.org/10.1111/jan.12504
- Nalle, M. A., Wyatt, T. H., & Myers, C. R. (2010). Continuing education needs of nurses in a voluntary continuing nursing education state. *Journal of Continuing Education in Nursing*, 41(3), 107–115; quiz 116–117. https://doi.org/10.3928/00220124-20100224-03
- Nickson, C. P., & Cadogan, M. D. (2014). Free Open Access Medical education (FOAM) for the emergency physician. Emergency Medicine Australasia, 26(1), 76–83. https://doi. org/10.1111/1742-6723.12191
- Pilcher, J., & Harper, M. (2016). Engaging learners with social media. Journal for Nurses in Professional Development, 32(3), 137–143. https://doi.org/10.1097/NND.0000000000000256

- Pizzuti, A. G., Patel, K. H., McCreary, E. K., Heil, E., Bland, C. M., Chinaeke, E., Love, B. L., & Bookstaver, P. B. (2020). Healthcare practitioners' views of social media as an educational resource. *PloS One*, 15(2), e0228372. https://doi.org/10.1371/journal. pone.0228372
- Reinbeck, D., & Antonacci, J. (2019). How nurses can use social media to their advantage. *Nursing*, 49(5), 61–63. https://doi.org/10.1097/01.NURSE.0000554624.05347.6e
- Rose, L., & Ramagnano, S. (2013). Emergency nurse responsibilities for mechanical ventilation: A national survey. *Journal of Emergency Nursing*, 39(3), 226–232. https://doi.org/10.1016/j.jen.2012.08.016
- Schriver, J. A., Talmadge, R., Chuong, R., & Hedges, J. R. (2003). Emergency nursing: Historical, current, and future roles. *Academic Emergency Medicine*, 10(7), 798–804. https://doi.org/10.1197/aemj.10.7.798
- Stevens, K. P., & Nies, M. A. (2018). Transforming nursing education in a 140-character world: The efficacy of becoming social. *Journal* of *Professional Nursing*, 34(1), 31–34. https://doi.org/10.1016/j. profnurs.2017.07.001
- Thoma, B., Joshi, N., Trueger, N. S., Chan, T. M., & Lin, M. (2014). Five strategies to effectively use online resources in emergency medicine. *Annals of Emergency Medicine*, 64(4), 392–395. https://doi.org/10.1016/j.annemergmed.2014.05.029

- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018).
  PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473. https://doi.org/10.7326/M18-0850
- Valdez, A. M. (2009). So much to learn, so little time: Educational priorities for the future of emergency nursing. Advanced Emergency Nursing Journal, 31(4), 337–353. https://doi.org/10.1097/ TME.0b013e3181bcb571
- Weiss, R. L., Kennell, J., Lakdawala, L., Anzio, N., Klamut, K. A., Lucas, W., Antinori-Lent, K., & Mininni, N. C. (2021). Nursing professional development specialist's role in adapting education, onboarding, and just-in-time education during the COVID-19 pandemic. *Journal for Nurses in Professional Development*, 37(3), 143–146. https://doi.org/10.1097/NND.00000000000000000
- Wilson, R., Ranse, J., Cashin, A., & McNamara, P. (2014). Nurses and Twitter: The good, the bad, and the reluctant. *Collegian*, 21(2), 111–119. https://doi.org/10.1016/j.colegn.2013.09.003
- Wolf, L., & Delao, A. M. (2013). Identifying the educational needs of emergency nurses in rural and critical access hospitals. *Journal of Continuing Education in Nursing*, 44(9), 424–428. https://doi.org/10.3928/00220124-20130816-38