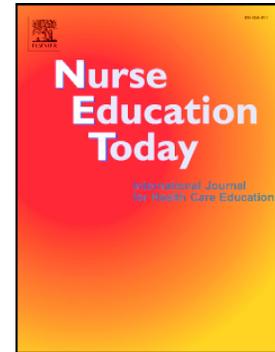# Journal Pre-proof

The use of social media (some) as a learning tool in healthcare education: An integrative review of the literature

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THE USE OF SOCIAL MEDIA (SOME) AS A LEARNING TOOL IN HEALTHCARE EDUCATION: AN INTEGRATIVE REVIEW OF THE LITERATURE

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The use of social media (SoMe) as a learning tool in healthcare education: an integrative review of the literature

Abstract

Objectives: The exponential rise of social media (SoMe) has transformed how people connect, learn, and network. The use of SoMe in health education is in its infancy. The objective of the review was to examine the use of SoMe by healthcare students, professionals and educators to ascertain if the use of SoMe enhanced the learning experience.

Design: An integrative literature review was completed in February 2019.

Data sources: Three databases were used to facilitate the literature search (Medline (Ovid), Cinahl, and Scopus).

Review methods: Inclusion and exclusion criteria for the literature search were applied and PRISMA guidelines followed. The search retrieved 316 citations. Forty-seven duplicate articles were removed at this stage. Titles and abstracts were screened and 215 excluded as they were not relevant. The remaining articles were assessed for eligibility and 37 were excluded for not meeting the review requirements.

Results: Critical Appraisal Skills Programme (CASP 2019) checklists primarily guided the critique of the literature, with the Caldwell *et al.* (2011) approach used to supplement the critique of health-related research studies. 17 research studies are included in this review. Themes were developed using Braun and Clarke's (2006) approach. Five reoccurring themes emerged: communication and collaboration, a source of reference, personal development, pitfalls and ethical concerns.

Conclusions: This review provides a synthesis of SoMe use in healthcare education. SoMe is an excellent educational resource which can provide advantages in education. Areas of concern were noted and the need for improved policy and guidance highlighted. Further research and education on SoMe use in healthcare education is essential for educators, students and practitioners.

262 words/300

Keywords: Nurse Education, Healthcare, Social Media (SoMe), Communication.

Introduction

Communication is essential in healthcare to both build and sustain relationships and yet in today's society, traditional communication methods are no longer deemed solely appropriate (Arrigoni *et al*. 2016). The rise of social media (SoMe) has transformed how people connect, learn and network (De Gagne *et al.* 2018). The development of Web 2.0 has changed the way we use the internet, due to the availability and accessibility of more immediate user interaction platforms (O'Reilly 2005). This has coincided with year-on-year increases totalling 4.021 billion internet users and 3.196 billion global SoMe users (Global Digital Report 2018). This emerging phenomenon has impacted all areas of civilisation, particularly the private and professional lives of many healthcare professionals (Arrigoni *et al.* 2016).

The term 'Social media' refers to the use of online tools created for social communication exchanges between users (Nyangeni et al. 2015). SoMe platforms are composed of three elements: content (pictures, videos and online messages), groups (needed for social interactions), and the internet (Lahti et al. 2017). SoMe encompasses a wide range of digital applications including blogs, microblogs (Twitter), videos and pictures (YouTube and Instagram), social networking sites (Facebook), wikis (Wikipedia), instant messaging (WhatsApp and Facebook messenger) and virtual worlds (Second Life) (Nyangeni 2015; Ross

and Myers 2017). Facebook, Twitter and YouTube are recognised as the most popular and widely used SoMe platforms in nursing education (Booth 2015).

Almost all healthcare organisations have a visible SoMe presence (Gagnon 2015); its use in education, however, is still developing (Price *et al*. 2018). A heavily debated and controversial topic, SoMe use in health education remains a challenge (Jones *et al*. 2016b). Ethical concerns, including the potential for privacy and confidentiality breaches, are prevalent (Maloney *et al*. 2014; Booth 2015). However, Price *et al*. (2018) argue that a lack of clear policy is hindering the use of what could be a beneficial teaching tool. The National Institute for Health and Care Excellence (2016), and the Nursing and Midwifery Council (2018) have recently offered guidance on acceptable SoMe use. When used appropriately, SoMe is a promising tool that enhances communication, provides information, and helps promote health-related resources (Sinclair *et al* 2015, Lofters *et al*. 2016).

Problem Identification

There are several problems that have been identified in the use of SoMe in healthcare education. According to Tuckett and Turner (2016), it is not clear if SoMe enhances learning, or merely supplements traditional teaching methods. Yet, over 80% of healthcare students are millennials, who do not know a time without the internet (Duke *et al.* 2017), suggesting the need for educationalists to review teaching styles and adapt curricula to evolve with ever-growing technological advances (Lahti *et al*. 2017). Stephens and Gunther (2016) argue that millennials have different brain structures and distinctive learning styles to digital immigrants.   Booth (2015) suggests that many educators are unclear of the usefulness of SoMe, or how to implement such a change into their teaching. As SoMe use in health education is in its infancy, there is a dearth of research on its effectiveness (Maloney *et al.*

2014; Gagnon 2015; Lahti *et al.* 2017). Leading to the question: does the use of SoMe enhance the learning experience of health professionals? The purpose of this integrative review is to provide a thorough synthesis of SoMe use in healthcare education, highlight gaps, and offer recommendations for education, practice, policy and research.

Methods

An integrative review was chosen as the review method as it allows a wide sampling frame and the inclusion of a broad range of literature from a variety of research methods. The review process followed the structured methodology outlined by Whittemore and Knafl (2005): problem identification, literature search, data evaluation and analysis and presentation.

Literature search

The literature search was carried out using Medline (Ovid), Cinahl, and Scopus databases. Keywords are illustrated in Table 1, following guidance from a subject-specific librarian.

Insert table 1 here

Search modes were extended to 'apply equivalent subjects' and 'apply related words.' with the Boolean operators 'AND' and 'OR' to produce more focused and productive results (Ely and Scott 2007). As suggested by Parahoo (2014), inclusion and exclusion criteria were established (Table 2), which restricted searches to the English language between 2014 and 2019. As SoMe use in education is in its infancy, a review of published research in the past five years was considered a suitable timeframe to produce relevant results.

Insert table 2 here

PRISMA guidelines (Figure 1) were applied to select the chosen literature (Liberati *et al.* 2009). The search identified 316 citations. 269 articles remained after the duplicates were excluded. Sources were then screened by title and abstract, and 215 unsuitable articles were excluded. Reasons for exclusion include but are not limited to: patients use of SoMe, healthy eating videos, patient blogs, and peer network support. Subsequently, 54 full-text articles were independently assessed for eligibility. Of the remaining articles, 37 were excluded for reasons including, but not limited to: advancements in technology, smartphone use, and WhatsApp use to connect burns patients. This resulted in 17 articles being implemented into the final review.

Insert figure 1 here

Data evaluation and analysis

To assist in the process of data evaluation (Whittemore and Knafl 2005), the SALSA (Search, AppraisaL, Synthesis and Analysis) approach (Grant and Booth 2009) was used to identify and distinguish the type of research study. The research selected utilised qualitative and quantitative approaches. Data analysis followed the Critical Appraisal Skills Programme (CASP 2019) checklists primarily guided the critique of the literature, with the Caldwell *et al.* (2011) approach used to supplement the critique of health-related research studies. Data were extracted and collated into tabular form, with similar data for ease of categorisation and comparison. A literature summary table is displayed in Table 3.

Insert table 3 here

Once the data was reduced to tabular form, further thematic analysis was completed using Braun and Clarke's (2006) six-phase guide: familiarisation with the data, generation of initial codes, search for themes, review themes, define themes, write up.

A critical review of the literature

This integrative review of the literature presented commonalities, and five reoccurring themes emerged (Table 4).

Insert table 4 here

Communication and Collaboration

Social media as an educational tool in healthcare teaching has been identified to improve collaboration and peer connections (Maloney *et al.* 2014; Booth 2015; Gagnon 2015; Stephens and Gunther 2015; Duke *et al.* 2017; Pimmer *et al.* 2018; Price *et al.* 2018; Tubaishat 2018; Warshawski *et al.* 2018). This review confirms that Facebook and Twitter are the main SoMe platforms that are currently used in health education. Maloney *et al.* (2014) reported that students create Facebook groups for continuous online interactions and to build support networks. Facebook provided a space where students shared ideas, offered advice, asked questions and availed of reminders, at any time of the day. Correspondingly, Tubaishat (2018) noted that 84.4% (n=128) of participants viewed Facebook as a necessity for enhancing communication. Facebook provided an avenue for peer learning, where interactions were enabled, and students could exchange thoughts, worries and educational experiences (Tubaishat 2018). As over 80% of healthcare students are millennials, and over 90% of 18-29-year olds are active Facebook users (Ross and Myers 2017), students used a familiar tool to make contributions, from their online place of choice.

Ross and Myers (2017) suggested that when communication occurred in non-threatening environments user involvement increased and users would participate with ease at their own pace.

Price *et al.* (2018) concurred, stating online interactions created a more collaborative learning approach; offering and receiving feedback encouraged the growth of peer support networks. It has been proposed that these exchanges are linked to increased confidence levels as students benchmark their levels of understanding against information gathered from these interactions (Price *et al*. 2018). Gagnon (2015) contended that by using Twitter, all class members could participate in online discussions, not only those who speak out in class. These results echo those reported by Tubaishat (2018), who suggested that online discussions reduced the stress and anxiety levels of individuals who are not comfortable with face-to-face interactions. Similarly, it is suggested that by the use of SoMe, students become empowered, as they begin to take more control over their learning (Tubaishat 2018).

Conversely, Jones et al. (2016a) stated that quieter students are dominated and over-powered by assertive students when using SoMe just as they are in the classroom. A common issue noted was the relationship between online communication and social relationships, with 93% of young adults having an online presence and 32% using of them using SoMe to build social connections (Maloney *et al*. 2014). It is not surprising that these tools are also used for the same purpose at university. Being part of online groups provides students with a sense of belonging, which can ease their adjustment into university life (Maloney *et al*. 2014). Correspondingly, Stephen and Gunthers (2016) reported that Twitter helped build social relationships both inside and outside the classroom. These connections

are also linked with improved psychological wellbeing (Maloney *et al*. 2014). Similarly, Pimmer *et al*. (2018), argued that WhatsApp use was associated with a reduction in perceived feelings of isolation. Researchers claimed that an increase in the use of WhatsApp during clinical placements led to increased engagement with their peers and lower feelings of isolation in professional situations.

Social media also improves communication between students and tutors. Facebook provides a platform where students can ask questions, clarify issues identified post-class, and receive feedback from their lecturers (Maloney *et al*. 2014). Price *et al.* (2018) argue that instantaneous feedback is associated with increased confidence and motivation levels. Similarly, Stephens and Gunther (2016) report that instant feedback has become a requirement for millennial students as they are reluctant to participate in discussions in its absence. They suggest that students prefer little or no face-to-face communication, and are more comfortable interacting with lecturers online (Tubaishat 2018). Similarly, Duke *et al.* (2017) contest that interactions of this nature can improve schooling. They affirmed that by using SoMe, lecturers can easily identify what works well and what does not, and amend their teaching plans to keep in line with current trends. However, a contrasting viewpoint by Maloney *et al*. (2014) is that lecturers should remain professionally distanced from students. Private life should be just that, and if blurred within boundaries of what information students consider is appropriate to share online, may lead to lecturers losing their credibility.

SoMe has been reported as a useful tool when students are struggling to communicate effectively. Booth (2015) examined the tweets of 189 nursing students over a collective six-day period and identified that Twitter was used as a coping mechanism. Stephens and

Gunthers (2016) claim that millennial students are susceptible to stress as a result of their poorly developed coping techniques, and little experience dealing with confrontation. Twitter interactions provided comfort and reassurance when the students expressed concerns, worries and apprehensions about their course (Booth 2015). Similarly, Warshawski *et al*. (2018), compared SoMe platforms and other support forums. Results showed an increase in both strength and confidence levels as students released stress online and adopted new coping strategies. Conversely, findings from the same study linked SoMe use to high pre-test anxiety levels. It may be suggested that exposure to new knowledge or learning of peer stresses can increase anxiety levels. These findings, however, are inconsistent with much of the existing literature and may result from cultural differences in Israel about the nature of the information that is posted online.

To summarise, the majority of the research points to the enhancement of communication and teamwork when using SoMe in health education.

A source of reference

Having outlined social media's usefulness in communication, another key finding is its instant source of information. As SoMe was initially developed for social purposes, it is not surprising that many critics question the reliability and precision of the educational information sourced from it (Booth 2015). However, social media's growth coincides with the availability of easy-to-access, up to date, evidence-based information at the click of a button. Blogs especially are effective tools that can accommodate information sharing, as users can post asynchronous messages, reply to posts, and engage in discussions. Nedder *et al*. (2017), reported that blogs not only provide an avenue for link sharing among staff, but they also can notify users with regular updates when new information is available. An

advantage being that users do not have to search for information, but that it is provided to them in real-time.

Similarly, Jones *et al.* (2016b) found that Twitter boosted the learning experience of its users. Twitter currently offers a wide range of health information and its integration into education can increase knowledge of health issues and specific diagnostics (Jones *et al.* 2016b). In addition, many health professionals are both accessible and willing to educate trainees during their student journey and beyond using SoMe (Jones *et al.* 2016b). Price *et al.* (2018) support this stating that Twitter use was linked to improved knowledge of nursing matters. The timely exchange of evidence-based information, without geographical barriers, encouraged users to gain a wider perspective of nursing, and indeed the field of healthcare in general.

According to Maloney *et al.* (2014) when SoMe is used in education it contributes to a more meaningful learning experience. YouTube and Facebook offer a huge selection of educational videos, interactive diagrams, real-life tasks and scenarios that are valuable learning tools for visual learners. Maloney *et al*. (2014), affirmed that YouTube promotes active learning for visual learners, as they began to apply new knowledge gained from these tools, which enhanced critical thinking and reflective skills. This finding is consistent with Stephens and Gunther (2016) who argued that instant tweet notifications provide valuable information, such as assignment reminders, course content, and keywords. The use of SoMe platforms enables the exchange of information outside the classroom, something that is useful to all class members. The use of SoMe can assist in the development of instantaneous learning for both students and registered health professionals.

<u>Personal Development</u>

So far, this thematic analysis has identified how SoMe in education enhances communication and is a platform for information exchanges. Closely linked to the previous theme, gathering and utilising relevant information can enhance personal and professional development. Twitter has been recognised as a tool that promotes academic gains by encouraging continuous, ongoing education (Gagnon 2015; Tuckett and Turner; Jones *et al.* 2016b; Price *et al.* 2018). A Twitter experiment by Gagnon (2015) reported that students found useful sources of information or "good follows" relating to their course. Using Twitter, students were encouraged to form academic accounts on LinkedIn, a social networking site designed for professionals to connect. Likewise, Jones *et al.* (2016b) reported over 50% of students in their study follow a combination of nursing journals, nursing communities, nursing press and the National Health Service (NHS). As these communities are inclined to post new research, articles and online blogs, the academic knowledge of many active followers can also develop.

Furthermore, Tuckett and Turner (2016) reported that Twitter enhanced knowledge of specific health issues, and promoted public health campaigns. Twitter is also recognised as a successful adjunct to traditional learning and teaching methods. Gagnon (2015), suggests that Twitter encouraged interactions, enhanced active learning, and improved critical thinking and reasoning skills, (as users were confined to 140-character posts at the time of the study), ideas needed to be communicated succinctly. However, Stephens and Gunther (2016), proposed a contrasting view, suggesting that a small character limit was frustrating, as students could not participate in comprehensive, in-depth discussions.

A further aspect of personal development was suggested by Price *et al.* (2018), who argued that the wealth of online information encouraged students to critique both usefulness and

reliability of the information. Likewise, Lahti *et al*. (2017) reported that Second Life (an online virtual world) helps to educate users on critical thinking and decision-making skills. Similarly, Jones *et al.* (2016a), stated that blogs are ideal to enhance clinical reflection; which is a vital skill for nurses to possess from an early point in their career. It is reported that blogs encourage education through dialogues, which are also designed to develop reasoning and rational thinking skills (Jones *et al*. 2016a). This prompted users to frequently reflect on how they work, and identify areas for improvement. Information obtained from SoMe may enhance professional skills, which may aid the transition from student to a registered health professional.

Pitfalls of social media use

Despite the promising benefits of social media as a pedagogical tool, many educationalists are still reluctant to use it due to the possibility of added distraction (Tubaishat 2018). Jones *et al*. (2016b) found that blogs can become a distraction as users often viewed them as another means of socialisation, and so its educational purpose may be lost. Correspondingly, Maloney *et al.* (2014) argued that SoMe already is a distraction to students and using it in education settings could intensify the problem, even with good intentions.

Another area of concern was raised by Tubaishat (2018), who claimed that SoMe contributed to procrastination and its use in education is related to lower academic successes. Similarly, Jones *et al.* (2016a) reported that SoMe reduced academic writing skills and encouraged plagiarism, as it becomes easier to copy and paste information online.

Improved communication was cited as one of the benefits of SoMe, however, Lofters *et al*. (2016) found that Facebook in healthcare failed to improve communication. Participants

reported that the online group was unnecessary, added extra time to their already demanding schedules and that face-to-face communication was preferred. The same concerns were reported by Jones *et al*. (2016a), who also stated that students became distanced from their peers, and failed to create professional friendships. Another issue raised in the literature is the reluctance to change or to learn a new skill, which may inhibit SoMe working in education (Maloney *et al.* 2014; Stephens and Gunthers 2016). If unfamiliar with certain SoMe tools, students of all ages claim that they do not have the time to learn new skills, which may add to the stresses, difficulties and demands of already overworked students (Price *et al.* 2018).

An area that is relevant to health care professionals is confidentiality. Stephens and Gunthers (2016) argue that students are cautious about sharing ideas in public spaces as posts are open to misinterpretation, which can mislead and confuse the reader. This may cause cyberbullying or trolling, which may make students less likely to use SoMe for professional purposes (Booth 2015; Stephen and Gunthers 2016; Jones *et al*. 2016a). To summarise, potential pitfalls of SoMe use in education do exist. Though avoiding SoMe is not the answer; there are a plethora of learning opportunities when used correctly.

Ethical and moral issues

Having identified the advantages and disadvantages of social media use in education, the final theme related to ethical concerns. The NMC Code (2018), in a professional guidance paper, outlines the core values expected of nurses and midwives and has more recently integrated into their standards the importance of e-professionalism. This comes at a time when the growth of SoMe coincides with a surge in unprofessional online conduct (De Gagne *et al.* 2018). Over 60% of the articles analysed discussed the potential for

misconduct. Common issues are the intentional and unintentional privacy and confidentiality breaches (Maloney *et al.* 2014; Nyangeni *et al.* 2015; Jones *et al*. 2016b; De Gagne *et al*. 2018; Tubaishat 2018). The challenge persists where health professionals fail to distinguish between their personal and professional lives online (Price *et al.* 2018). This may inadvertently lead to the disclosure of personal and private health-related information (Jones *et al*. 2016a), which can potentially identify patients and healthcare settings (Nyangeni *et al.* 2015). The trust of healthcare staff may be hindered, as well as the reputation of the industry itself (De Gagne *et al.* 2018). Breaches often have long term repercussions, resulting in instant dismissals and the withdrawal of licences (De Gagne *et al.* 2018)

Nyangeni *et al.* (2015), conducted semi-structured interviews with 12 nursing students in South Africa, who admitted knowingly using SoMe irresponsibly. Intimate videos and photos were posted online, without consent, and students manipulated patients to enhance their professional experiences. This study, although not unique, draws attention to the need for the imminent development of standard guidelines that outline responsible SoMe use worldwide. This is emphasised by De Gagne *et al.* (2018), who completed a descriptive, cross-sectional review of 230 nursing school websites. They reported that only 34.8% (n=80) had appropriate guidelines in place. This is an international concern and requires urgent action such as suitable guidelines that outline the consequences of misconduct. While, this may prove difficult due to the constant development of SoMe platforms and lack of resources to monitor its use, the importance of e-professionalism should not be underestimated (Price *et al.* 2018). Interestingly, Jones *et al*. (2016b) recommended that digital professionalism should become an essential nursing skill. Ethical issues are a concern

for integrating SoMe use in education, but clear policies and guidelines on e-professionalism could help alleviate these concerns.

Discussion

This literature review focused on the use of SoMe as a promising platform to enhance learning in health education. However, further research is necessary using larger sample sizes, from multiple settings, using validated and reliable tools (Maloney et al. 2014; Tubaishat 2018) to formally measure and evaluate the use of a variety of SoMe tools in undergraduate and postgraduate settings to ascertain if it is the best method to support learning and information retention in healthcare education (Gagnon 2015; Lofters et al. 2016; Nedder et al. 2017).

Social media encourages communication and teamwork among its users. Research suggests these collaborations promote peer-learning, increase confidence levels, improve psychological well-being, and reduce professional isolation. However, it would be useful to examine how the use of SoMe in education can be transferred into professional careers (Nyangeni et al. 2015; Lahti et al. 2017; Nedder et al. 2017) and to report these findings to all healthcare settings to help to create or amend guidelines for acceptable use (Nyangeni et al. 2015).

Social media provides an instant source of information, from reputable online bodies, without geographical barriers. The academic information sourced from SoMe encourages professional development in the healthcare field. Despite this, some researchers claim SoMe in education is unnecessary, and a distraction for already overworked students. Training for educators on managing the benefits and issues concerned with SoMe use would

be useful (Lahti et al. 2017; Duke et al. 2017; Price et al. 2018; Tubaishat 2018). Concerns around e-professionalism, privacy and confidentiality could be addressed within the training to further develop this promising tool in health education (Nyangeni et al. 2015; Booth 2015; Duke et al. 2017; De Gagne et al. 2018).

Common strengths identified from the studies selected included the use of data analysis packages for analysing results, which is recommended to enhance the reliability of quantitative research (Grey 2018). This type of computer software was used by Jones et al. (2016b), Duke *et al.* (2017), and Tubaishat (2018). Quantitative results with a P-value of <0.05, and a good Cronbach alpha score (>0.70) indicate reliable results. These results were illustrated by Duke *et al*. (2017), Tubaishat (2018), and Pimmer *et al*. (2018).

Common limitations that were identified from the studies included small sample sizes, research from a single setting which limited the transferability and the generalisability of quantitative results to the population at large. Poor response rates are further limitations found in the studies, which have been recognised as a potential source of bias (Rindfuss *et al*. 2015). Williamson and Whittaker (2017) argue that convenience, non-random sampling is the least credible sampling method; a factor identified in several studies. Non-validated tools and statistically insignificant results are further limitations. These weaknesses make it difficult to draw significant conclusions on the effectiveness of SoMe in education.

The analysis from this review highlights the need for improved policies and guidelines worldwide so that all users can benefit from the readily available learning opportunities. Universal policies are crucial to avoid cyber incivility and to encourage digital professionalism (Tuckett and Turner 2016; De Gagne et al. 2018) The outcomes provided by SoMe are diverse, and research illustrates that using SoMe as an educational tool can

enhance the learning experience of many healthcare professionals. Through education and support, all healthcare professionals should be informed on how to act when using social media, and when and where to engage with it in practice (Tuckett and Turner 2016).

Conclusion

The rapid and exponential growth of the internet, Web 2.0, and SoMe, in particular, has reformed how we communicate. This review delivers a thorough synthesis of SoMe use by healthcare students, professionals and educators in clinical practice and in third level settings. Findings determine that SoMe is an excellent educational resource that can enhance the learning experience of health professionals and can benefit both educationalists and healthcare students alike. SoMe has the potential to enhance communication, collaboration, personal development, as well as offering an up-to-date source of reference. SoMe use is linked to improved peer-learning, increased confidence levels, improved psychological well-being, and reduced professional isolation. Evidently, areas of concern were identified, including issues of e-professionalism, privacy and confidentiality. The need for improved policy and guidance should be addressed to ensure safe use. Further research and education on social media use in healthcare education is essential for educators, students and practitioners.

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Table 1: Key words used in the search

social media OR web 2.0 OR social network* OR twitter OR facebook OR instagram OR whatsapp OR mobile app* OR youtube OR blog*	AND	nurs* education OR nurs* learning OR nurs* teaching OR nurs* teaching tool OR nurs* training OR health* professional* education OR health* professional* learning OR health* professional* teaching OR health* professional* teaching tool or health* professional* training

Table 2: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Published between 2014 and 2019	Published prior to 2014
Available in English	Published in another language other than English
Human Research	Secondary research
Peer-reviewed academic journals	
Focused on social media in nurse and health professional education	

Table 4: Key themes in the review

Theme
Communication and collaboration
A source of reference
Personal development
Pitfalls of social media
Ethical and moral issues

Identification

Sources identified through database searching
(n = 316)
CINAHL=169   Medline n=110
Scopus n=37

Additional records and professional documents identified through other sources
(n = 0)

Screening

Records after duplicates removed
(n = 269)

Records screened
(n =269)

Records excluded on title or abstract & aim
(n =215)

Eligibility

Full-text articles assessed for eligibility (n=54)

Full-text articles excluded, with reasons
Not relevant (n=37)

Included

Studies included in quantitative synthesis
(n = 15)
Surveys/questionnaire=13
Passive content analysis= 1
Web site search=1

Studies included in qualitative synthesis
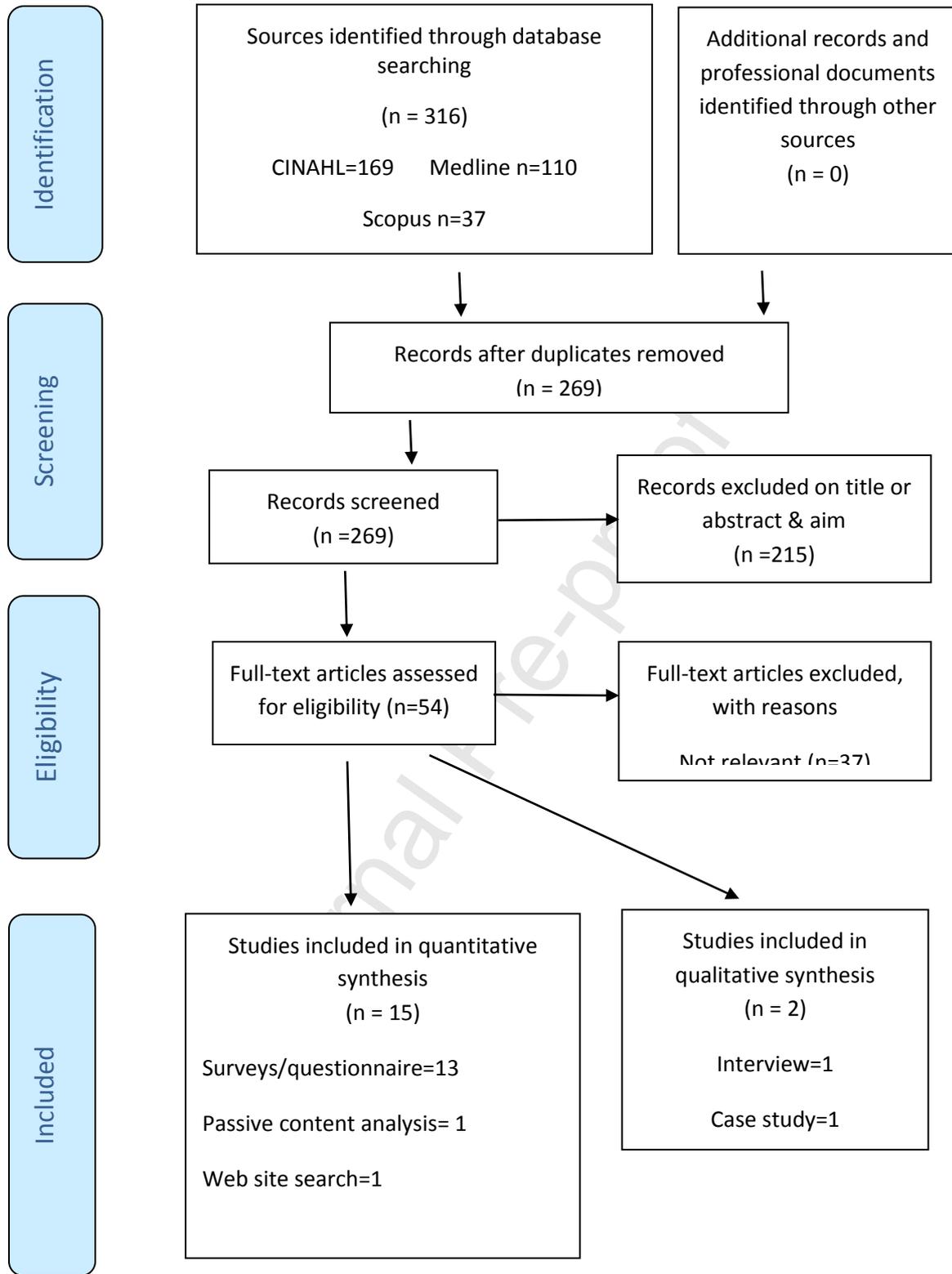(n = 2)
Interview=1
Case study=1

Figure 1 PRISMA Search Results

Table 3: Presentation of search findings from databases

Authors/ Year	Title	Methodology	Population/ Samples	Setting	Relevance
Booth. 2015	Happiness, stress, a bit of vulgarity, and lots of discursive conversation: a pilot study examining nursing students' tweets about nursing education posted to twitter	Conventional content analysis; passive analysis	189 tweets from nursing students	Worldwide: geographical location unknown as information gathered from tweets via search engine socialmention.com	Exploring how students cope with nursing school; using Twitter to analyse tweets
De Gagne et al. 2018	Social media use and cybercivility guidelines in US nursing schools: a review of websites	Descriptive cross-sectional, and non-experimental website search design	230 nursing school websites	Nursing schools throughout the United States of America.	Use, policies, and guidelines on social media use
Duke et al. 2017	Social media in nurse education: utilization and e-professionalism	Questionnaire	337 nursing students 29 nurse faculty members	One nursing school in Canada	Exploration of social media use and potential professional implications
Gagnon. 2015	Using Twitter in health professional education	Pre and post course student surveys	36 physical therapy students	America	Measures overall social media use, and perceptions of Twitter in health professional education
Jones et al. 2016(a)	To blog or not to blog: what do nursing faculty think?	Survey	122 nurse educators	49 schools of nursing in Illinois and 38 schools of nursing in	The use of blogging in nurse education,

				Ontario	identifying subsequent barriers of its use
Jones *et al* 2016(b)	Introducing Twitter as an assessed component of the undergraduate nursing curriculum: case study	Case study	547 nursing students	Plymouth University, United Kingdom	Insight into the effectiveness of adding Twitter to nursing curriculum
Lahti *et al* 2017	Use of social media by nurse educator students: an exploratory survey	Survey	49 nurse educator students	One university in Finland	Descriptions of the use of social media in nurse educators education, and how their learning needs are linked to social media
Lofters *et al.* 2016	Facebook as a tool for communication, collaboration, and informal knowledge exchange among members of a multisite family health team	Survey	26 health professionals	One Family Health Team in Toronto, Ontario	Evaluating private Facebook group as an aid to improve communication and collaboration
Maloney *et al.* 2014	Social media in health professional education: a student perspective on user levels and prospective applications	Questionnaire	142 physiotherapy students	One university campus in Australia	Health professional students' use and behaviours associated with social networking sites

Nedder *et al.* 2017	Blogging as an innovative method of peer-to-peer educational sharing	Survey	37 nursing staff members	One hospital ward (Cardiac intensive care unit) in Boston Massachusetts	Effectiveness of blog use to provide peer-to- peer sharing of relevant professional education
Nyangeni *et al.* 2015	Perceptions of nursing students regarding responsible use of social media in the Eastern Cape	Semi-structured interviews	12 nursing students	One nurse education programme in South Africa	Perceptions of appropriate social media use within nursing students
Pimmer *et al.* 2018	Instant messaging and nursing students' clinical learning experience	Questionnaire	196 nursing students	Five schools in Oyo State, Nigeria	Student nurses experience of WhatsApp use in clinical practice
Price *et al.* 2018	First year nursing students use of social media within education: results of a survey	Cross-sectional survey	121 nursing students	One university in South East England, United Kingdom	Evaluates the use of social media prior to and upon completion of a pre-registration programme
Stephens and Gunther. 2016	Twitter, millennials, and nursing education research	Survey	70 nursing students	Two state-supported universities in South-eastern United States	The use of twitter as a delivery method of nursing research
Tubaishat. 2018	Student nurses' perceptions of Facebook as an interactive learning platform in nursing education	Pre-test and post-test questionnaires	186 nursing students	One public university in Jordan	Student nurses experiences of using Facebook
Tuckett	Do you use	Survey	112 nurses	New Zealand and	Describes the

and Turner 2016	social media? A study into new nursing and midwifery graduates uptake of social media		and midwives	Australia	use of social media in professional education of new nursing and midwifery graduates
Warshawski *et al.* 2018	Role of academic self-efficiency and social support on nursing students' test anxiety	Self-administered questionnaires	240 first and fourth-year nursing students	One undergraduate nursing programme in Israel	Associations between test anxiety, self-efficiency and social support from social media