Uncovering cyberincivility among nurses and nursing students on Twitter: A data mining study

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ABSTRACT

Background: Although misuse of social networking sites, particularly Twitter, has occurred, little is known about the prevalence, content, and characteristics of uncivil tweets posted by nurses and nursing students.
Objective: The aim of this study was to describe the characteristics of tweets posted by nurses and nursing students on Twitter with a focus on cyberincivility.
Method: A cross-sectional, data-mining study was held from February through April 2017. Using a data-mining tool, we extracted quantitative and qualitative data from a sample of 163 self-identified nurses and nursing students on Twitter. The analysis of 8934 tweets was performed by a combination of SAS 9.4 for descriptive and inferential statistics including logistic regression and NVivo 11 to derive descriptive patterns of unstructured textual data.
Findings: We categorized 413 tweets (4.62%, n = 8934) as uncivil. Of these, 240 (58%) were related to nursing and the other 173 (42%) to personal life. Of the 163 unique users, 60 (36.8%) generated those 413 uncivil posts, tweeting inappropriately at least once over a period of six weeks. Most uncivil tweets contained profanity (n = 135, 32.7%), sexually explicit or suggestive material (n = 37, 9.0%), name-calling (n = 14, 3.4%), and discriminatory remarks against minorities (n = 9, 2.2%). Other uncivil content included product promotion, demeaning comments toward patients, aggression toward health professionals, and HIPAA violations.
Conclusion: Nurses and nursing students share uncivil tweets that could tarnish the image of the profession and violate codes of ethics. Individual, interpersonal, and institutional efforts should be made to foster a culture of cybercivility.

What is already known about the topic?

- A growing number of nurses and nursing students use Twitter for their personal and professional interactions.
- Uncivil uses of Twitter have been found among health professionals and students.
- Little is known about the prevalence, content, and characteristics of uncivil tweets posted by nurses and nursing students.

What this paper adds

- Nurse leaders should review their institutions' social media policies, and evaluate their effectiveness in protecting not only the integrity of the profession but patient privacy as well.
- Nurse educators should provide students with a basic definition of cybercivility and make sure they uphold the highest standards of professionalism and understand they will be held accountable for infractions.

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- Future studies are warranted to explore the prevalence, content, and characteristics of uncivil interprofessional and intraprofessional behavior in other forms of virtual communities.

1. Introduction

Many of the estimated 1.8 billion individuals on social networking sites across the globe (Baker and Algorta, 2016) are not only communicating with friends, staying in touch with family, and commenting on news feed items, but are posting about their professional interactions as well. In the case of healthcare providers, this development raises the obvious patient privacy issues. It has prompted a growing number of studies to examine how nurses and nursing students are using social media.

A systematic review on this topic reported that 64–96% of health professions students and 13–47% of healthcare providers use social networking sites for personal and professional reasons (von Muhlen and Ohno-Machado, 2012). Similarly, a meta-analysis study involving 4143 medical students in seven countries revealed that 60–75% reported using social media, 20% of them for sharing academic information (Guraya, 2016). Another study showed that 50–67% of the pharmacists in Australia, the United Kingdom, and the United States embraced social media in their practices and for educational purposes (Benetoli et al., 2015). In nursing alone, 89–93% of U.S. nurses say they have used social networking sites, sometimes with other health professionals (Kung and Oh, 2014; Piscotty et al., 2016).

Known as a real-time social network, Twitter (http://www.twitter.com) boasts more than 300 million active users (Statista, 2017). The public microblog has rapidly permeated all layers of society, including nursing (e.g., professional organizations, hospitals, patients, universities, faculty, nurses, and students). Twitter feeds or tweets generated by users can involve other health professionals, as well as the general public, at the national as well as the international level. A growing number of nurses and students are using Twitter for various purposes, including searching for clinical resources, looking for job openings, and sharing or exchanging ideas (Kung and Oh, 2014; Piscotty et al., 2016).

It is evident that the use of social media has the potential for positive professional development through the sharing of credible health information, networking, and keeping current with developments in the medical field (Chretien et al., 2015). However, when used inappropriately, it can degrade the working and learning environment, harm reputations, and negatively affect patient safety. Globally, nurses have been encouraged to harness the potential that social networking sites offer and lend their voices to important online conversations. Many of the major nursing associations worldwide have sought to facilitate these professional exchanges by offering support and guidance for the use of social media. Official guidelines have been published in the United States by the American Nurses Association (American Nurses Association (ANA, 2016) and the National Council of State Boards of Nursing (2011); in the United Kingdom by the Nursing and Midwifery Council (NMC, 2015a); in Australia by the Health Practitioner Regulation Agency (2014); and in Finland by the Finnish Nurses Association (Arifulla et al., 2016).

Despite widespread dissemination of these guidelines, research is uncovering misbehavior in cyberspace among health professionals and students. Examples of online misbehavior include posting: negative comments about patients, peers, work, or other health professions; confidential patient information; pictures of intoxicated individuals; discriminatory language; foul language; and sexually explicit content (De Gagne et al., 2016). Chretien et al. (2011) found online postings that contained profanity, violated patient privacy, and crossed ethical boundaries to make medical product or proprietary service recommendations. While physicians' unprofessional Twitter use was briefly reported in the *Journal of the American Medical Association* (Chretien et al., 2011), no study has sufficiently addressed the subject.

Thus, guided by a media ecology framework (Strate, 2017), our study explores the nature and characteristics of cyberincivility on Twitter, online behavior that does not conform to norms or values held by most members of society and the nursing community (Sternberg, 2012).

1.1. Cybercivility and cyberincivility in health professions education

Inquiries into cybercivility and cyberincivility can be understood by taking advantage of previous studies that examined ethics, responsibilities, and communication central to members of healthcare professions. In an integrative review of cyberincivility in the health-related disciplines of nursing, medicine, and allied health, cyberincivility was defined as "direct and indirect interpersonal violation involving disrespectful, insensitive, or disruptive behavior of an individual in an electronic environment that interferes with another person's personal, professional, or social well-being, as well as one's learning" (De Gagne et al., 2016, p. 2). Granted, consensus on what is uncivil online behavior may not always be easy to agree upon, but healthcare providers are expected to uphold professional and ethical standards expected by the public and other members of the profession.

Professional profiles are increasingly being used to curate professional online identities, which can then be followed by patients, colleagues, and potential employers (Wilson et al., 2014). Fenwick (2014) challenged health professionals to consider whether unprofessional behaviors were the consequence of social media or the result of existing problems made visible via social media. Interestingly, a survey of medical students revealed that 42% believed that their online activity did not have any bearing on who they were as professionals (Ross et al., 2013). In this same survey, participants expressed frustration with the unrealistic expectations that institutions had about their online behavior and that institutional restrictions excluded normal social interaction. This idea that online professionalism was unrealistic was also mirrored in another study that found Australian medical students planned to change their social media profiles to project a more professional image after graduation (Barlow et al., 2015). Similarly, 40.2% of pharmacy students surveyed said they would change their behavior on social media after becoming licensed pharmacists, while 72% reported that they would edit their profiles before applying for jobs (Benetoli et al., 2015).

There were many instances in the literature where consensus could not be reached on what exactly constituted unprofessional behavior online. When asked if a Facebook friend request from a faculty member to a student is a violation of professional standards, 78.9% of pharmacy students at a public university said yes, while 56.5% of pharmacy students at a private university agreed. At both institutions, students said they would feel uncomfortable and/or concerned about possible consequences if a faculty member wished "to follow them" on social media (Bongartz et al., 2011). In a systematic review of the literature, Chretien and Tuck (2015) found that studies involving medical students could not define inappropriate behavior in cyberspace between students and faculty. Likewise, medical schools could not agree on social media policies and guidelines (Kind et al., 2010). In a study of 230 U.S. schools of nursing with their own websites, only 34.8% (n = 80) had explicit social media policies or guidelines (De Gagne et al., 2017). While most violations that occur on social media are inadvertent, they can have immense consequences up to and including job loss, civil and criminal penalties (Spector and Kappel, 2012). Nurse leaders recommend that all nurses and nurse educators should review their institutions' social media policies and use them as guidelines. Nurses are also encouraged to be catalysts in the development of these policies (Spector and Kappel, 2012).

1.2. Media ecology theory

Media ecology theory, the study of media as human environment, offers a useful framework for understanding how online computer-
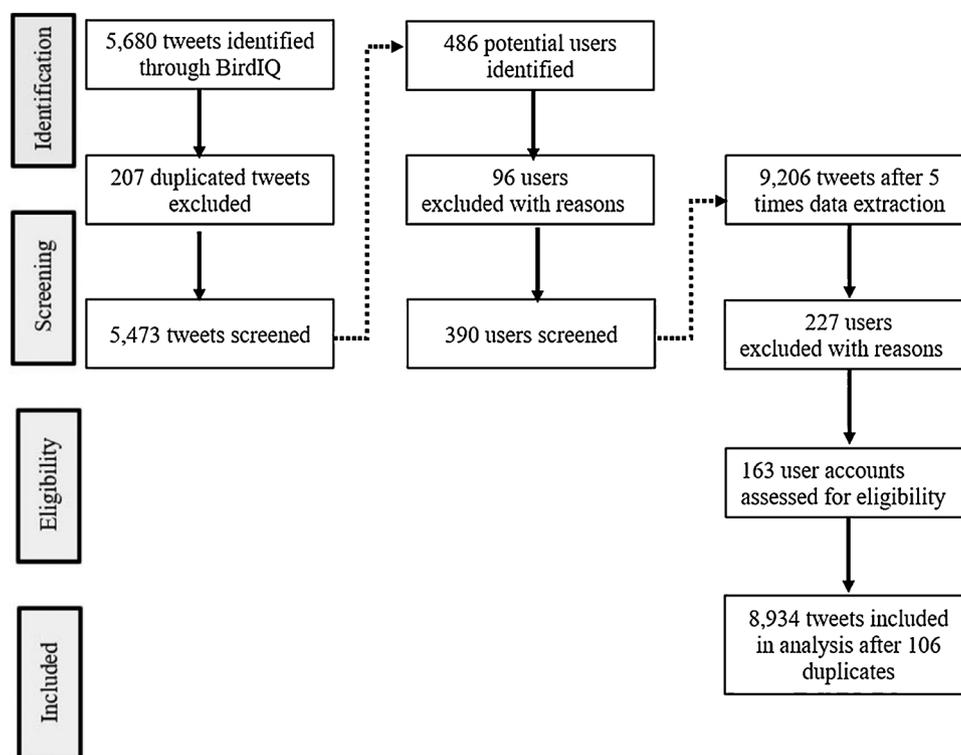
Fig. 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart to show data-mining and sampling procedures.

mediated communication (CMC) affects human interactions (Strate, 2017). Hiltz and Turoff (1933) outlined that the inevitable difficulties that have been found with more contemporary social media users who exhibit undesirable, unexpected, unanticipated, and forbidden behaviors, postulating that a lack of familiarity with CMC environments is the largest contributor to problematic online behavior. As such, these scholars have supported the idea that a media ecology framework untangles the specifications of: (a) transactions among individuals, (b) their messages, and (c) their message system while conveying the consequences of technology (Sternberg, 2012). In the case of Twitter, its simplicity, intimacy, and lack of formality, as well as the impulsivity promoted in this environment, can lead users to deviate from expected social norms by engaging in uncivil communication (Ott, 2017).

In more recent years, several empirical studies have raised concerns regarding uncivil use of social networking sites by current and future healthcare providers, which could be harmful to their professional standing and to the public (Alnemer et al., 2015; Barlow et al., 2015; Marnocha et al., 2015). While computer science and jurisprudence would be practical approaches to address the most offensive behaviors such as cybercrime, a media ecological approach would offer humanistic perspectives that focus on sociological and psychological aspects of online misbehavior, thereby facilitating behavioral and social management in cyberspaces (Sternberg, 2012). Likewise, media ecology can help develop relevant questions about uncivil tweets (i.e., messages) by nurses and nursing students (i.e., transactions among individuals) (i.e., the message system). Ultimately, the study of cyberincivility, guided by media ecology theory, could inform decisions about the design of educational innovations and practice changes in the technology-mediated environment.

The aim of this study was to describe the characteristics of uncivil tweets posted by nurses and nursing students on Twitter with a focus on cyberincivility. The objectives were to (a) examine the prevalence of tweets deemed disrespectful, insensitive or disruptive, and potentially harmful to patients and/or organizations and (b) to describe patterns and differences in types of uncivil tweets.

2. Methods

2.1. Design and sample

A cross-sectional, twitter data-mining method was used to elicit both quantitative and qualitative information. The sample was from self-identified nurses and nursing students on Twitter worldwide. However, only tweets in English were included in the sample. The first step involved identifying user accounts by searching for the following hashtags: #nursingstudent, #nurselife, #registerednurse, #nursepractitioner, #futurenurse, and #nurse. Our study required the retrieval and analysis of thousands of tweets and their accompanying Twitter accounts. To do so, we used the desktop version of BirdIQ (https://birdiq.net), a cross-platform data extraction tool for Twitter, which allowed us to search for tweets and accounts matching specific criteria. The search results are returned in a multi-tabbed Microsoft Excel® (http://www.microsoft.com) workbook that includes the raw tweets, as well as summaries for the top retweeted and favorited tweets, the top-mentioned accounts, hashtags, URLs, words, tweeting accounts, and influencers.

2.2. Data collection

Using a desktop application that searched Twitter in bulk for tweets matching the chosen hashtags, we extracted 5680 tweets posted in January 2017. After 207 duplicate tweets were removed, 5473 were reviewed based on the inclusion criteria: nurse, nursing student to become a nurse, nurse practitioner, and nursing student to become a nurse practitioner. Exclusion criteria were: those who did not identify themselves as nurses or nursing students in their profiles, private accounts, deleted accounts, and ambiguous accounts. Initially, a total of 486 potential accounts were identified; of those, 96 users whose identities could not be ascertained or that did not meet the inclusion criteria were excluded. From the remaining 390 users identified in January 2017 (1st phase), we ran data extraction five times a week from February through April 2017 (2nd phase), which resulted in 9206 tweets. Users who had

not tweeted during the second data extraction period (n = 221) and those who had tweeted as representatives of organizations such as professional nursing entities or universities (n = 2) were then removed. Any tweets from deleted user accounts (n = 2) or from accounts that became protected during the second phase of data collection (n = 2) were also excluded. This manual data-sorting process resulted in a list of 163 user accounts that generated 8934 unique tweets after 106 duplicates had been removed. The framework of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis statement (Moher et al., 2009) was used to guide the data collection procedure (see Fig. 1).

2.3. Ethical considerations

The institutional review board of a university deemed this study to be exempt (Protocol ID: Pro00080371). Twitter is a publicly available source of social data widely used for social research and scientific exploration (Levallois et al., 2015), although it presents significant ethical challenges and risks to collect, store, and analyze such a mass of personal data (Hasselbalch and Tranberg, 2016). Technically, if tweeters decide to leave their accounts public, their profiles, tweets, or retweets can be viewed and searched without their permission or knowledge. Our most pressing concern during this study was potential consequences of ordinary users harming their reputations or becoming public figures by the uncivil nature of tweets from their accounts. Following data analysis, we de-identified the users so that tweets would be untraceable.

2.4. Data analysis

The quantitative data were analyzed using SAS 9.4 software (SAS Institute Inc., Cary, NC). Descriptive statistics were calculated for gender, country, user categories, length of tweet account history, the number of tweets/retweets, uncivil tweets, presence of inappropriate profile descriptions, the total number of tweets liked, the number of followers for each account, and the number of users each account follows. The univariate odds of presence of uncivil tweets were examined for several tweet account characteristics by using logistic regression.

The tweet contents were analyzed in NVivo 11 (QSR International Pty Ltd, Doncaster, Victoria, Australia), a qualitative data analysis software. In a similar manner with the definition of cyberincivility aforementioned (De Gagne et al., 2016), we considered "uncivil tweets" as those written in ill-mannered, disrespectful, or containing annoying, derogatory, disruptive, and/or aggressive remarks. In our study, uncivil tweets are under a big umbrella of online misbehaviors that are often perceived as inappropriate, unprofessional, impolite, and/or unethical by most members of the nursing or health professions community.

First, a team of coders examined all 8934 tweets in the dataset to determine which tweets were uncivil. Following the definitions above, coders independently examined a subsection of this total to categorize a tweet as uncivil. When grey areas existed, the coding team members asked themselves whether he or she would publicly post such tweets (considering both content and communication style); if the answer was no, then the tweets were coded as uncivil.

After the coding team had isolated these uncivil tweets, they used consensus coding to further analyze the content of the tweets (Hays and Singh, 2011). Specifically, the team met and reviewed all tweets coded as uncivil. Then, the team agreed upon how to code the uncivil tweets according to how they were uncivil; types of incivility included profanity, product promotion, sexually explicit or suggestive content, and others (see Table 1). The coding team developed these categories both from the literature on cyberincivility as well as inductively.

2.5. Validity, reliability, and rigor

The data were checked and validated in collaboration with the two

consultants in the research group and a combination of data analysis methods. While all data cleaning was performed in Microsoft Excel®, the computerized statistical analyses were conducted in SAS. For the qualitative data analysis, the entire coding team met regularly and discussed how to code the content of each tweet to achieve consensus. Through consensus coding, the team achieved full agreement on all codes, thereby ensuring high reliability and a rigorous approach to analysis (Hays and Singh, 2011). The team also consulted with an experienced NVivo trainer, qualitative researcher, and statistician.

3. Findings

3.1. Sample characteristics

A total of 163 study samples were analyzed. These came from 143 nurses (87.7%) and 20 nursing students (12.3%), in 14 countries—74 from the United States (45.4%), 29 from the United Kingdom (17.8%), 15 from Canada (9.2%), 26 from unknown countries (16.0%), and 19 from other 10 countries (11.7%). The study sample was primarily female (n = 133, 81.6%), 16.6% male (n = 27), and 1.8% gender unknown (n = 3). These users had been tweeting an average of 4.7 years (SD = 2.43), ranging from 79 days to 8.9 years. Each issued an average of 6501.6 (SD = 10,457.0) tweets and retweets with a minimum of 12 tweets/retweets and a maximum of 57,252 tweets/retweets. The number of tweets the user "liked" in his/her account's lifetime averaged 4489.5 (SD = 14,074.1). The mean number of followers each account had and the mean number of users each account followed were 1024.1 (SD = 3719.8) and 877.1 (SD = 2645.6), respectively.

Of the 163 users, 60 (36.8%) had tweeted inappropriately, over the six-week period, at least once and issued 6.93 uncivil tweets on average (SD = 14.03), with a maximum of 97 and a median of 3. Characteristics of accounts with uncivil tweets are presented in Table 2 with means and odds ratios (ORs). Findings from the logistic regression analysis revealed that Twitter users were more likely to issue inappropriate tweets if they tweeted more often ([OR], 1.026; 95% confidence interval [CI], 1.008–1.045). How long the user had been tweeting, the total number of tweets liked, the number of followers the account had, and the number of users this account followed were not associated with the presence of inappropriate tweets (Table 2).

Over the six-week period, the 60 users generated 413 (4.62%, n = 8934) tweets categorized as uncivil. Of those, 240 tweets were related to the nursing profession; nursing students tweeted about school life, and nurses tweeted about their professional work (employment, job responsibilities, or the nursing profession). The other 173 uncivil tweets related to personal life. Major categories of uncivil content were profanity, product promotion, sexually explicit or suggestive content, and demeaning remarks about patients. Others included name-calling, rude comments, interprofessional aggression, alcohol, drugs, HIPAA violations, racial and ethnic references, intraprofessional aggression, and risky behaviors or violence. Several tweets had multiple instances of incivility with overlapping content categories.

Of those 413 uncivil tweets, profanity was most often the offense (n = 135, 32.7%) and linked with almost all other categories. Tweets and retweets that included full or shorthand profane words or hashtags were defined as profanity. Therefore, the profanity category included tweets such as "#s***patientssay" and "WTF." When nursing-related tweets and personal tweets were compared, profane tweets in the personal life category were the most prevalent (see Fig. 2). Some expressions of profanity were linked to sexually explicit or suggestive content (n = 37, 9%), including images such as nurses in lingerie, references to anatomy, masturbation, statements about having sex, and pornographic videos. Profane texts focused on users' work environments and included obscenities aimed at patients and coworkers. Some of the work-related tweets in this category included quotes from patients about genitalia, threats of sexual violence, and descriptions of assaults.

Some tweeters expressed frustration or disbelief or called

Table 1
Codebook.

Type of incivility	Definition
Profanity[a]	The use of abusive, vulgar, or irreverent words or language, images, or symbols that could offend or upset people
Product Promotion[a]	Disseminating health or medical information about a product, product line, brand, or company without proper evidence
Sexually Explicit or Suggestive[a]	The depiction or description of nudity or suggestive clothing/posing or graphic commentaries about an individual's body
Demeaning to Patients[a]	Remarks or attitudes causing patients to lose their dignity and respect
Name-calling[a]	The use of abusive names to belittle, degrade, intimidate, or humiliate another person
Rude Comments[a]	Impolite or mean statements about organizations or people, and all other comments that could potentially make others feel uneasy
Interprofessional Aggression[b]	Remarks or expressions regarded as an instance of direct/indirect, hostile/subtle, intentional/unintentional attitudes across the health professions
Alcohol & Drugs[a]	Remarks or expressions depicting drunkenness and/or intoxication
HIPAA Violation[a]	Any information publicly displayed that reveals or could reveal information that is confidential or identifies or could identify a patient
Racial & Ethnic References[a]	Prejudicial remarks or expressions based on a difference in skin color and/or against people of minority ethnic backgrounds or subcultures
Intraprofessional Aggression[b]	Remarks or expressions regarded as an instance of direct/indirect, hostile/subtle, intentional/unintentional attitudes within the nursing community
Violence[a]	Remarks or photos that represent destructive action or force
Risky Behaviors[a]	Remarks or photos that are perceived as carrying a risk of negative results, other than activities related to alcohol and drugs

[a] A priori.
[b] Emerged codes.

Table 2
Association of Twitter account characteristics with presence of uncivil tweets.

| Characteristics	OR (95% CI)	*p*-value
Years of tweeting	1.050 (0.920, 1.199)	0.4699
Number of tweets and retweets issued by the user[a]	1.026 (1.008, 1.045)	0.0038
Number of tweets this user has liked in the account's lifetime[b]	1.003 (0.999, 1.008)	0.1506
The number of followers this account has[b]	1.006 (0.996, 1.016)	0.2163
The number of users this account follows[b]	1.004 (0.992, 1.016)	0.4966

[a] Every 500.
[b] Every 100.
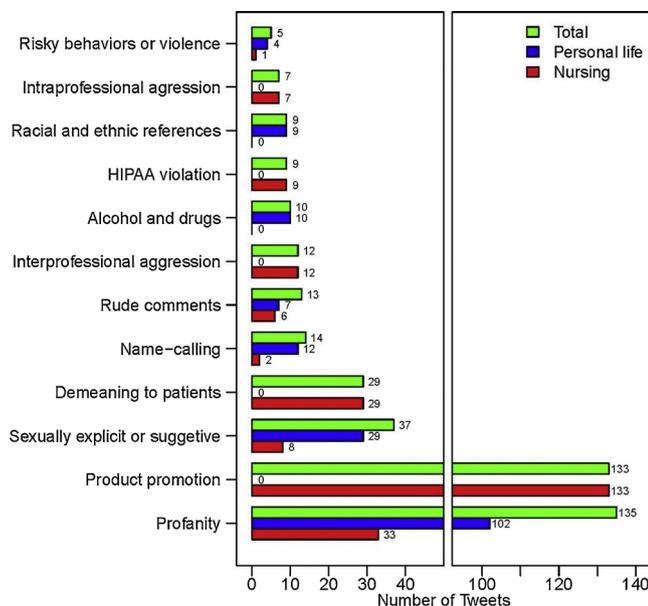
Fig. 2. The categories of uncivil tweets in the nursing- and personal-related groups.

individuals names (n = 14, 3.4%). Some of these tweets were political in nature due to the timing of this study. Nurses also called individuals names, such as "bitch," a "f*** savage," "liar," "complete c**k," "idiot," and "a fat virgin." Most of these entries were found in tweets related to personal life. Racial and ethnic references (n = 9, 2.2%), found only in the personal category, included a description of a minority group as "ghetto." Racial slurs were mostly directed toward African Americans. Memes and GIFs included discriminatory language toward LGBT groups. Ten tweets (2.4%) included videos, comments, memes, or re-tweets depicting or implying drunkenness, sharing plans to get drunk, and insinuating drinking on the job. One video included a dancing person with the caption "getting lit," followed by an apology for being drunk. Another video showed someone with cup in hand falling down some stairs due to assumed intoxication. Two tweets commented on drinking in the morning, while another mentioned drinking the night away.

Of the 240 tweets related to nursing, there were 29 instances (12.1%) of nurses demeaning patients, which included tweets that suggested tricking a patient by giving a fake name, inappropriately venting about a patient's condition, making jokes about a patient's situation, or otherwise tweeting unprofessionally about a patient. This category also included the use of memes and GIFs, which were used to depict patient behaviors and often portrayed them negatively. For example, one GIF showed a head shaking to display disgust, while another exhibited eye rolling to imply the patient was acting inappropriately. Other nurses tweeted comments that expressed disbelief about patient decisions, such as leaving the hospital. Moreover, there were 9 (3.8%) instances of HIPAA violations. These included posting photos with patient information (e.g., patient x-rays and photos of injuries) and giving enough details about diagnoses or procedures to make it possible to identify them. Overall, these tweets expressed lack of respect, confidentiality, professionalism, and humanity.

In the 240 tweets from the nursing-related group, there were also 19 (7.9%) that demonstrated aggression toward health professionals; of those, 12 (5.0%) were targeted interprofessionally and 7 (2.9%) intraprofessionally. Interprofessional tweets were mostly aimed at physicians although other targets included a resident, administrative personnel, a physician assistant, and a pharmacist. These tweets questioned health professionals' abilities by calling them incompetent and making sarcastic remarks about college degrees and salaries. Intraprofessional tweets included criticizing fellow nurses' work and management regarding work schedules. Also among these 240 tweets, there were 133 instances (55.4%) in which tweeters promoted skin care products and cosmetic procedures that lack evidence; two nurses posted these types of tweets to advertise health products.

4. Discussion

The purpose of the current paper was to analyze Twitter content relating to cyberincivility among nurses and nursing students. Our study sample consisted of a diverse group from 14 different countries.

Kung and Oh (2014) surveyed nurses from 43 states within the United States, of whom 80% held a master's degree or higher in nursing. Piscotty et al. (2016) surveyed 140 RNs enrolled in an RN to BSN program at a public university in the United States. Similar studies have examined the use of Facebook by nurses and nursing students, including Tower et al. (2015), who studied sophomore nursing students at an Australian university, and Barnable et al. (2018) who surveyed 97 nursing students at a Canadian university. None of these studies, however, examined the nature and content of the tweets to understand how this social media platform was being used by nurses and nursing students.

Our findings indicate that 36.8% of the nurses and nursing students in our sample posted uncivil content on Twitter at least once during our six-week data collection. In a similar study on medical students' Facebook habits, Barlow et al. (2015) found that of the Australian medical students surveyed, 34.7% disclosed that they had posted unprofessional content on their Facebook accounts. In a survey of 1107 deans and directors at U.S. schools of nursing, Marnocha et al. (2015) found that 77% were aware that unprofessional content had been posted by students at their university. When Chretien et al. (2009) surveyed the deans of student affairs from 130 U.S. medical schools, 60% responded that they were aware of incidents involving unprofessional content posted by students at their schools. While these studies measured awareness of uncivil use of social media among health profession students, they failed to analyze the relationship between Twitter user characteristics and the presence or frequency of uncivil posts.

Our novel finding that Twitter users were more likely to post inappropriate content if they tweeted relatively often raises questions regarding the effect of frequent users and the unique culture of cyberspace. This finding could be explained by the observation that those who have been on Twitter longer could be more comfortable with the technology and engage in more conversations around a wider range of purposes, including discussing more sensitive topics such as political opinions or religious views (Oz et al., 2017). Although a cause-and-effect relationship cannot be established with our study design, certain characteristics of cyberspace, such as anonymity, invisibility, and asynchronicity, as well as personal, professional, and cultural factors (Suler, 2015), may have also affected some individuals into using uncivil communication via Twitter. These negative actions are not necessarily a product of the environment but may instead be a dimension of personalities that are disinhibited by the environment (Suler, 2015). These extraneous variables could also explain the non-significance of the other odds ratios. This finding could be a good starting point for further research to identify nurses and future nurses who put themselves, their profession, and their employers at risk with cyberincivility. Peck (2014) discussed the risks involved in posting unprofessional content, stating that it can damage the individual's reputation, his or her institution, and the nursing profession as a whole. Furthermore, posts that violate patient confidentiality and breach HIPAA are not only illegal, but they are also violating to the patient and their family. Trust is not only lost in the healthcare provider's ability to protect them as a patient, but also in the healthcare provider's capability and humanity. The argument that users misunderstand the nuances of the CMC environment is relevant, and as such, it is imperative that health professionals be made to understand the effect of their social media content on their professional character and the profession's integrity.

While there continues to be disagreement in the literature and the opinions of health professions students as to what constitutes unprofessional behavior (De Gagne et al., 2016, 2017), profanity is consistently viewed as uncivil behavior. The high prevalence of profanity in the uncivil tweets we examined (32.7%) seems to indicate that healthcare providers and health professions students consider their online presence to be a part of their private lives separate from their professional identities. Marnocha et al. (2017) warned about the perspective of distinct professional and personal lives with regard to social media use among nursing students. Westrick (2016) declared

professional and personal identities almost impossible to separate. While the argument is often made than an individual has a right to freedom of speech, nurses have been fired and nursing students have been expelled for bad behavior online. In 2009, a nursing student was expelled for posting obscene remarks about her patients on her blog site. The student argued that it was within her First Amendment right to make such statements. However, when the case went before the District Court, the federal judge ruled that the school's honor code and confidentiality agreement governed the situation (Yoder, 2009). In another case of First Amendment rights, the U.S. Supreme Court ruled that statements made by a public employee were not protected as freedom of speech if these statements were made regarding their official duties, and therefore the Constitution did not shield the employee from employer's discipline (Ceballos, 2006). Utilizing sentinel events related to misuses of cyberspace and their consequences could be an effective teaching tool for health professionals and students.

Other major categories of uncivil content found in our study were product promotion, sexually explicit or suggestive content, and demeaning comments about patients. Nurses and nursing students called others names and made rude comments directed at personal acquaintances, colleagues, and patients. Other uncivil posts included references to alcohol and drugs, HIPAA violations, racial and ethnic remarks, and posts about risky behaviors or violence. These findings are consistent with those of Marnocha et al. (2015) who reported that nursing student made negative comments about others (58%), breached patient confidentiality (31%), used discriminatory language (29%), and posted intoxication or sexually suggestive depictions (20%). These findings were also similar to those reported by Barlow et al. (2015) who cited medical students' posts about alcohol intoxication (34.2%), illegal drug use (1.6%), patient information (1.6%), and illegal acts (1.1%). Likewise, Chretien et al. (2011) found that physicians had tweeted medical product or proprietary service recommendations, potential patient privacy violations, sexually explicit material, and discriminatory statements. These similarities lead to the question of how far professionalism standards reach into one's personal life continues to be debated, yet one wonders why such 'personal' tweets and posts were made publicly available by the individual user. Although debatable, product or medical therapy promotion on social media can be unethical if there is a conflict of interest, if products that are being promoted are unsupported by evidence, or if products or therapies contradict current guidelines (Chretien et al., 2011). As the ANA Code of Ethics Provision IV states, "The nurse has authority, accountability, and responsibility for nursing practice; makes decisions; and takes action consistent with the obligation to promote health and to provide optimal care" (2015, p. 15). As a profession, nurses are held in high esteem within society and are consistently voted the most trusted healthcare profession. Therefore, when the title nurse is added to a commercial or personal promotion on a public social media site, it is important to assure that product or medical therapy promotion is based on evidence and in a professional manner.

Our analysis also uncovered several disturbing instances of tweets containing derogatory racial and ethnic remarks and discriminatory language regarding several minority groups. These findings, consistent with previous studies, are alarming considering the importance of diversity and inclusion, as well as the ethical and professional standards that nurses take an oath to uphold. In the Code of Ethics, Provision I reads, "The nurse practices with compassion and respect for the inherent dignity, worth, and unique attributes of every person" (American Nurses Association (ANA, 2015, p. 1). Globally, nurses of other nations are held to similar codes of conduct including *The Code: Professional standards of practice and behavior for nurses and midwives* by the Nursing and Midwifery Council of the United Kingdom Nursing and Midwifery Council (NMC, 2015a,b) and the *Code of ethics for nurses in Australia* by the Nursing and Midwifery Board of Australia (Nursing and Midwifery Board of Australia (NMBA, 2008). Future studies could examine how the public image of nursing and the patient-provider

relationship is affected by the content of uncivil tweets that can be readily viewed by the general public.

Finally, there were several instances of interprofessional and intraprofessional aggression and cyberincivility in our findings. No studies were found that assessed this type of incivility specific to Twitter. However, in an integrative review on how health professionals use social media, Rolls et al. (2016) noted high rates of "non-posting" or "lurking" behaviors on virtual communities. They did not, however, classify such behaviors as uncivil but pointed out unreliable information, lack of privacy, negative tone of discussion, alienation, and unprofessional behavior as barriers to effective online communities for professional networking, knowledge sharing, and evidence-informed practice. Future studies could examine the pitfalls of these forums including the prevalence and incidence of uncivil interprofessional and intraprofessional behavior.

4.1. Limitations

There are limitations to our study that warrant further discussion. First, causal inferences could not be made because of the cross-sectional nature of the study. Second, our study is limited to self-identified nurses and nursing students on public, searchable Twitter accounts. A caution is also warranted for the relatively small number of nursing students compared to nurses within our sample. Finally, there was no independent coding of the comments by an external coder, but these tweets and the codes were discussed and agreed between members of the research team. Thus, our own a priori knowledge and beliefs on cybercivility and cyberincivility may have led to researchers' confirmation bias when deciding the inclusion and exclusion criteria and interpreting and engaging with the data.

5. Conclusion

This study takes an important step in reviewing and identifying uncivil interaction on Twitter by nurses and nursing students. Our findings suggest that nurses and nursing students need guidance as well as opportunities to practice professional behavior online. Likewise, institutions should also invest time in discussing expectations, providing resources, and reviewing behavior standards. Nurses must be provided with explicit policies and continuing education on the use of social media for both personal and professional development. For future nurses, the topic of cybercivility should be incorporated into formal and hidden curriculum to ensure that they understand they will be held accountable for their online behavior. By socializing students and nurses to the organizational culture, educators and administrators can convey the importance of cybercivility to ensure high standards in patient privacy and confidentiality, appropriate boundaries between patient and provider, and responsible use of virtual communities.

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