Quality Advancement in Nursing Education - Avancées en formation infirmière

Beyond Checklists: A Nursing Informatics Education Strategy for Undergraduate Nursing Students Appraising Health Information on Social Networking Sites (SNS) / Au-delà des listes de vérification : Une stratégie de formation infirmière au numérique pour l'évaluation, par les étudiantes de premier cycle, des informations sur la santé présentes sur les sites des réseaux sociaux (SRS)

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Cover Page Footnote

Introduction

In the past six decades, there have been marked innovative developments of social media technology. Introduced in the late 1970s, social networking sites (SNS) flourished from initial newsgroups, list serves, blogs, and chatrooms, to Wikipedia, as the first crowdsourced online encyclopedia. In addition, other examples of SNS emerged, such as Facebook, Twitter, Pinterest, WhatsApp, WeChat, and Snapchat. SNS are described as Internet-based technologies and applications that permit users to create a profile allowing them to generate, manipulate, and text, audio, photo and/or video content (Bahr, Crampton, & Domb, 2017, p. 71). The profile user can create groups to connect with others in an online-network community and acquire real-time feedback while adjusting the content (Bahr et al., 2017; Chandler & Munday, 2016; Kostick, Blumenthal-Barby, Wilhelms, Delgado, & Bruce, 2015). More importantly, SNS "assume the characteristics of information openness, participation, interaction, sharing, connectedness, creativity, autonomy, collaboration, and reciprocity" (Kostick et al., 2015 p. 518). SNS are constructs of single or multi-directional human relational interaction patterns regarding information gathering and dissemination in virtual public spaces (Bahr et al., 2017; Kim & Xie, 2017; Thackeray, Crookston, & West, 2013).

Understanding the complexities of the health information sharing practices of users of SNS is an emerging area of research. Public health officials are concerned about the potential risk of SNS users encountering and acting upon incorrect health-related information. Numerous health care organizations and professionals have explored SNS as useful platforms for improving and enhancing client health outcomes by communicating and disseminating health care information (Lacroix & Hamilton, 2017). For example, SNS can be used to establish support groups, recruit those with rare diseases, and share health related information bi-directionally (Hausmann, Touloumtzis, White, Colbert, & Gooding, 2017).

Seventy-nine percent of the North American population of all age groups use Facebook as their primary SNS; overall, 86% of this population use the Internet, of which 88% are young adults, ages 18-29 (Greenwood, Perrin, & Duggan, 2016). Increasingly, the public relies on technology and online sources for their health information (Ghaddar, Valerio, Garcia, & Hansen, 2012; Hale, Pathipati, Zan, & Jethwani, 2014; Li & Brilla, 2008; Stellefson et al., 2011). For example, patients with chronic conditions, females, young adults, and those with a regular family physician, tend to use SNS for health-related information and activities (Thackeray et al., 2013). These patients gain support and acquire information to make health-related decisions (Kim & Xie, 2017). Young people are thought to be savvier at finding health information; however, they lack the ability to evaluate the reliability and applicability of such information (Hausmann et al., 2017; Kell, 2011; Li & Brilla, 2008).

The trustworthiness of health information found on SNS is questionable due to the ability of users to contribute and edit online knowledge and the absence of adequate peer review processes (Li & Brilla, 2008). Buhi and colleagues (2010) evaluated the quality and accuracy of health information from websites, including SNS, visited by young adults. They found usual quality indicators did not provide enough support to help young adults differentiate between high and poor-quality information. However, exposing youth, a vulnerable population, to credible sources of online health information is associated with higher levels of health literacy (Ghaddar et al., 2012; Kim, Park, & Bozeman, 2011). Kim and Xie (2017), in their research, found that health information on SNS are generally written above the recommended grade six readability level, concluding people with high literacy are more likely to access SNS for health-related

information than those with low literacy. In addition, people who have low health literacy seem to rate high-quality websites as low in quality and rate low-quality websites as high in quality. Contributing factors to these findings may be the use of surface criteria, such as where the search results are positioned and the aesthetic qualities used to evaluate the SNS. DeWalt, Berkman, Sheridan, Lohr, and Pignone, (2004) found that low literacy levels are linked with decreased health outcomes, poor disease management, increased hospitalizations, and decreased quality of life.

Important to nursing practice is the knowledge that patients prefer a shared decision-making model (Elwyn, Edwards, Kinnersley, & Grol, 2000; Scholl, LaRussa, Hahlweg, Kobrin, & Elwyn, 2018). In view of health literacy as a systemic issue, patients and health care providers share the responsibility to the development of informatics competencies (Buhi, Daley, Furhmann, & Smith, 2009; Canadian Association of Schools of Nursing [CASN], 2012; DeWalt et al., 2004; Hannah, Ball, & Edwards, 2006; Hussey & Kennedy, 2016; Mendes, Abreu, Vilar-Correia, & Borlido-Santos, 2017). CASN (2012) developed *Nursing Informatics Competencies for Undergraduate Nursing Curricula* to build capacity in students to seek, find, and use information and information technology in their practice. In a joint position statement on nursing informatics, the Canadian Nurses Association and the Canadian Nursing Informatics Association (2017) endorsed the definition of nursing informatics created by the special interest group of the International Medical Informatics Association (IMIA, 2009). This definition is, "Nursing informatics science and practice integrates nursing, its information and knowledge, and their management, with information and communication technologies to promote the health of people, families and communities worldwide" (para. 2). In addition, students are to use this knowledge to work collaboratively with patients in developing health literacy for informing health care decisions. Nurse educators, as invested stakeholders, are continually exploring innovative ways to incorporate these competencies in undergraduate nursing curricula. Nursing students, like young adult SNS users, appraise website design and aesthetics as determinants of website quality (Kim et al., 2011). Internet experience and the ability to find information are insufficient when nursing students are required to appraise the credibility of information from SNS for application to nursing practice. There is an expectation that nursing students be knowledgeable and incorporate research into their practice, but, to date, nursing informatics is not fully integrated in all nursing curricula (Nagle et al., 2014).

Our main purpose, therefore, is to describe how students' informatics competence was enriched through the development, and implementation of a Credibility, Argument, Purpose, and Evidence (CAPE) guide compared to the previously implemented checklist as part of a Digital Health Assignment (DHA). We achieved the purpose through the following objectives:

1. To develop and implement a guideline to assist students in appraising the quality of health information from SNS as part of a DHA.

2. To evaluate the effectiveness of the CAPE guide by surveying students using The Constructivist Online Learning Environment Survey (COLLES).

3. To compare the survey results between the newly developed CAPE guide and previously used Trust in Online Health Information (TOHI) checklist in the DHA to comprehend how educators can facilitate students' transition from an understanding of health information shaped by SNS to an understanding of health information informed by best scholarly evidence.

Background

An initial scoping search, conducted in 2015, intended "to summarize and disseminate research findings" and "identify research gaps in the existing literature", specifically with the aim to explore undergraduate nursing students' abilities to critically appraise the quality of health information from online sources, including social media (Arksey & O'Malley, 2005). This 2015 review informed our previous research using the TOHI tool to support students in evaluation of the quality of online health information (Theron, Redmond, & Borycki, 2017). A follow-up search conducted in 2017 located research published since then. The database CINAHL Complete was used to explore academic literature that researched students' abilities to appraise the quality of online health information. Limiting the search to peer-reviewed articles published in the past three years in English left 366 results. Two reviewers examined the titles and abstracts of the 366 articles, selecting 99 articles for further review and reducing the results to 12 articles. Several articles were added through a process of citation chasing and forward citation searching of key articles identified by the researchers, bringing the total to 15 articles. The evidence described students' e-literacy search practices and student's appraisal skills as discussed below.

Students' E-literacy Search Practices

In a systematic review of undergraduate students' eHealth literacy, Stellefson et al., (2011) found while students are generally tech-savvy, their eHealth literacy skills are largely substandard, specifically in their search practices. Of the 1,156 US youth, Wartella, Rideout, Montague, Beaudoin-Ryan, and Lauricella (2016) surveyed, 49% used search engines to access health information. Among these youth, 50% click on the first site and continue to search elsewhere only if they need more information. Kim et al. (2011) found that college students "trusted Google to be objective and accurate in placing the most relevant website at the top of the results" (p. 191). In a study of 308 undergraduate students, Ivanitskaya, O'Boyle, and Casey (2006) found that 84% of them rated their research skills highly. Upon further investigation, they found 89% of students knew that one-word searches would yield excessive results; however, they were largely incapable of using Boolean operators to refine their searches. In addition, they had trouble distinguishing primary from secondary documents and accurately evaluating the reliability of online health information. Similarly, Brown and Dickson (2010) found occupational therapy students had confidence in their ability to find and evaluate information but lacked confidence in applying the information in practice. The tendency for students to overestimate their research capabilities are well documented (Eysenbach & Köhler, 2002; Senkowski & Branscum, 2015; Stellefson et al, 2011).

Students' Information Appraisal Skills

The literature clearly indicates a discrepancy between students' confidence in their ability to search and appraise health information and the quality of information they retrieved. Such discrepancies suggest the cautious use of self-evaluation rating scales to measure students' informatics competencies. An extreme example of this is a study participant who stated, "if it's on the Internet, then it's credible" (Kim et al., 2011, p. 192). While most undergraduate nursing students rate their computer skills highly, the majority were unfamiliar with eHealth or its relevance to their future careers as nurses (Edirippulige, Smith, Beattie, Davies, & Wootton, 2007; Kim et al., 2011). Robb and Shellenbarger (2014) found, in their study of 59 college students using Norman and Skinner's 2006 eHealth Literacy Scale (eHeals), most students felt confident in using the Internet to find information to answer health-related questions. Students,

however, still expressed a lack of confidence in using this information to make health care-related decisions. Based on this finding, Robb and Shellenbarger (2014) recommended faculty create structured learning activities to help students develop their abilities to discover and appraise the quality of SNS health information for competent and ethical practice.

Current university students, in searching for and appraising health information are influenced by their use of SNS. Despite their parallels to traditional appraisal resources such as textbooks and lectures, few checklists have been developed to assess blogs and podcasts for use in medical education (Thoma et al., 2015). Numerous researchers propose further development of skills and tools for assessing the quality of networking sites (Kostick et al., 2015). Amid this refinement, the TOHI developed by Rowley, Johnson, and Sbaffi (2015) is a scale-specific tool to support students to determine whether the information they find online can be trusted. In the first year of innovating the DHA, the TOHI tool was chosen for its usability and simplicity. Central to developing the ability to evaluate online health information is a suitable checklist, designed to help students become skilled at applying the CASN informatics competencies. The evidence supports our main purpose which was to develop, implement and evaluate a more robust appraisal guide compared to the previously implemented checklist, as part of a DHA.

Development and Initial Evaluation of the DHA

The development of this assignment was grounded in a social constructivist educational pedagogy. Vygotsky's zone of proximal development is a framework allowing for development of problem-solving skills, requiring social construction of knowledge through community engagements towards meaning making. This contemporary theory values life-long learning in a community environment of teacher-learner negotiation, as well as students and patients in clinical settings, with emphasis on the learning journey rather than specific content (Horsfall, Cleary, & Hunt, 2012; Myrick & Tamlyn, 2007). The DHA focused on developing learning experiences to foster critical appraisal skills. Greer, Pokorny, Clay, Brown, and Steele (2010) describe educators as facilitators of student-centred learning highlighting the responsibility of students in their learning journeys to engage in reflection, praxis and effective dialogue, consequently increasing competence and confidence.

In 2016, the DHA was designed for undergraduate second-year nursing students for their Care of the Childbearing Family course. The focus in developing this assignment was to appraise health information from SNS in relation to how students engage in care with families in hospital settings. Evidence-informed principles are integrated throughout the course, requiring critical educational discussions around a plethora of family and patient care decisions. In practice, students inevitably address health-related information, such as newborn care, from various sources for parents to incorporate into their health care decision-making process. Nursing students are expected to search and use reliable and high-quality evidence as part of their nursing care, and to teach families how to search, find, and appraise evidence from a variety of sources. Similar to Brettle and Raynor (2013), our current nursing curriculum requires students to attend annual sessions with the nursing liaison librarian to acquire skills of searching, finding, and assessing credible information. Badke (2016) emphasizes that informatics skills are complex and need practice with several rounds of feedback over time. The inability of educators to provide ongoing feedback to large classes results in implementing other learning activities, such as completing online tutorials or short face-to-face informatics sessions, which tend to evaluate only cognitive domains of learning. Consequently, evaluating student's ability to apply and appraise informatics skills, in practice, poses various difficulties (Brettle & Raynor, 2013). As a

result, educators are exploring ways to enhance these informatics skills by improving student confidence in using SNS information as part of their practice decisions (Kim et al., 2011; Robb & Shellenbarger, 2014).

In 2016, we designed a DHA requiring students to identify a practice problem during their clinical rotation in a hospital setting and find a SNS post related to this problem. Students used Facebook and posted the following in a closed group: (a) SNS information, (b) a completed TOHI checklist (adapted from Rowley et al., 2015) to evaluate the information, and (c) a search for relevant articles from CINAHL (with a summary from scientific evidence regarding their chosen interest). To conclude, students submitted a written paper whereby they compared the information from their various sources and proposed key practice recommendations regarding the practice problem.

Learning perceptions were evaluated by the students utilizing a Likert-type scale adapted from the COLLES Survey (Taylor & Maor, 2000), which measured the assignment's ability to elicit relevance, reflection, interaction, making sense, educator support, and peer support during the completing of the assignment. The COLLES is described in greater detail in the methods section. According to student perceptions about their learning, the assignment quickly proved less effective for several reasons: (a) the Facebook platform was difficult to navigate, (b) written peer feedback was superficial, (c) the TOHI checklist did not reveal students' critical thinking processes or develop confidence in using the information as part of their clinical decision making, and (d) at least 36% of students did not perceive the assignment helpful in their learning (Theron et al., 2017). Reflecting upon student feedback, expert faculty, and librarian suggestions, a new assessment guide was developed and implemented: the CAPE guide.

Development of the CAPE Tool and Modification introduced on the DHA

While the TOHI is a tested and comprehensive checklist, its length and complexity make it unsuitable for use outside the classroom. One goal of health literacy education is to have students develop evaluation strategies they can apply when they are in practice. The TOHI checklist, however, with its nine headings and 45 sub-categories, was far too complex to apply when evaluating information in the clinical situation (Theron et al., 2017; Meola, 2004). Furthermore, using the TOHI tool students were only able to determine whether information was reliable in a compartmentalized "yes", "no", or "maybe" fashion. Drawing upon expert interviews, relevant literature, and developed resources, such as the Credibility, Accuracy, Reasonableness, Support (CARS) checklist (http://www.virtualsalt.com/evalu8it.htm) and MedlinePlus Guide to Healthy Web Surfing (https://medlineplus.gov/healthywebsurfing.html) we developed the CAPE guide (see Figure 1) to move beyond a checklist. The Cape guide employs a more flexible measure, whereby students note the *tendency* of a web resource towards a particular item on the scale, rather than making an absolute evaluation. One of the most significant aspects of the guide was the inclusion of space for students to record rationales for indicating whether the SNS health information is more or less reliable against each criterion. This process makes the scale more manageable and allows instructors to gain insight into students' decision-making processes. The goal of the revised DHA was to appraise the quality of maternal-child health information on SNS (Facebook, Pinterest, Reddit, Quora, or a social medium of choice), and locate credible, library-mediated sources of information to summarize for use for students and patients, again focusing on developing previously mentioned CASN informatics competency indicators. In the revised DHA, students followed guidelines to render a PowerPoint presentation, a patient education pamphlet, and a short paper containing (a) a

description of a relevant practice problem identified during their clinical rotation in a hospital setting, (b) a description of how they searched and found a SNS post relating to this problem, (c) a completed CAPE guide, (d) a description of their search strategy (including key words) for two relevant articles from library-mediated biomedical databases (with a summary from scientific evidence regarding their chosen interest), (e) a key practice recommendation regarding the practice problem, and (f) a reflection of their learning about the appraisal process of health information from SNS.

Figure 1

CAPE: A Guide for Evaluating Health Information on Social Media Sites

Problem: _____

Social media site: For example, Facebook, Quora, Twitter, Pinterest, LinkedIn, Reddit etc.

Group number: _____

Less Reliable	Characteristic	More Reliable	Comments
	Credibility of social media posting		
	• author's credentials available		
	• author or site contact information is provided • known or respected authority or organizational support (org, .gov, and .edu, institutions that produce information)		
	• disclaimers present and report possible conflicts of interest, e.g., funding agencies, the sale of commercial products linked to the social media site.		
	• evidence of peer review or feedback from reliable experts		
	Arguments		
	• objective and balanced perspective (not a personal experience or opinion)		
	• free from marketing language such as: o absolute terms ("cures cancer"), o vague, ill-defined terms ("natural," "surprising"), o inflammatory terms ("big pharma")		
	• claims are supported by scholarly evidence (from academic literature)		
	Purpose		
	• intended audience is clear, e.g., new mothers		
	• information is explained at the right level (grade level/age/language)		
	• level of detail appropriate for audience (amount of • information)		
	Evidence		
	• current (within the last 5 years)		

	• provides sources for further reading		
	• links to or provides enough information to access original source/research		
	• accurately reports information from original study		
	• makes claims that are consistent with what you know as a health		

Method, Sample and Data Collection

This work reports on an educational evaluation study using the COLLES survey combined with open ended questions to measure students' perspectives regarding their experience of the DHA. Quantifiable scores from the COLLES survey combined with qualitative responses provided us with a greater scope of information. Use of quantitative and qualitative data is documented as valuable for use in educational research, "combining robust analysis of outcome data with qualitative methods that provide an understanding of the processes through which, and the contexts in which, those outcomes are achieved" (Sockolow, Dowding, Randell, & Favela, 2016, p. 83). The adapted COLLES Likert type scale contained 34 statements divided under the headings relevance, reflection, interaction, making sense, educator support, and peer support and assignment. Participants could choose their response from levelled options, one through five, representing almost never, seldom, sometimes, often, and almost always. In addition, four open-ended questions elicited student perceptions of the best part of their learning, what they felt they learned, suggestions on how to improve the assignment, and other comments.

The 2017 class was comprised of 46 females and 2 males, ranging in age from 21–43 years of age, with an average age of 23 years. From this group, at the completion of the course, a convenience sample of forty-two (N=42) students completed the COLLES evaluation of the revised DHA using the CAPE guide.

In a second set of analysis, the DHA evaluations from the 2017 cohort of students, who used the developed CAPE guide, were compared with the DHA evaluations of the 2016 cohort, who used the TOHI checklist. The nature of the formatting between the CAPE guide and the TOHI checklist required minor wording adjustments to the COLLES survey and qualitative questions. These adjustments were required to reflect the change in online platform and using Facebook to using Moodle. Also, the 2017 cohort presented their findings in class versus the 2016 cohort who posted their finding on a closed Facebook group.

Ethical Considerations

In both 2016 and 2017, appropriate ethical approval was obtained from the university's research ethics board to collect data for the evaluation of the DHA. To prevent power over situations, an impartial faculty member administered the COLLES survey during both evaluations. Surveys were anonymously completed, and students were informed that once they submitted the completed survey, their contribution can no longer be removed since it cannot be identified.

Data Analysis

Data analysis of the DHA was completed with Statistical Package for Social Science (SPSS) Version 24, determining measures of central tendency by analysis of descriptive statistics frequencies, with the mode being reported as the most frequent score. The mode was reported due to the use of a Likert scale in the COLLES survey. Sample size and adaption in the

assignment limits the use of comparative statistical analysis. Student responses to the four open-ended qualitative questions were coded for themes. Examples of these questions are (a) "the best part of this assignment was…" and (b) "I came away from this assignment having learned…" Comments for each question were entered into an excel spreadsheet, coded, and categorized until abstraction occurred for the final identified themes (Elo & Kyngäs, 2008). In a secondary analysis, the COLLES survey data of 2016 (where students utilized the TOHI tool in their DHA) was compared to the COLLES survey data of 2017 where students utilized the CAPE guide. Using SPSS, new variables were created by combining the scores on individual statements from the COLLES survey categories. This process allowed for determining the mean score for the categories of relevance, reflection, interaction, making sense, educator support, peer support and assignment (Baker, 2007). These mean categorical scores were entered as data into an excel spread sheet and created into a chart view to demonstrate educational significance.

Decisions to enhance the scientific quality and rigour of the study occurred at every stage of the structured research process through ongoing discussions and consultations with the research team by maintaining a detailed audit trail of all decisions (Polit & Beck, 2017). In addition, the quantitative data was analyzed and discussed with the research team in consultation with an experienced statistician. At the completion of the coding of the qualitative data, the emerging and final themes were discussed in-depth, and their meaning agreed upon by the research team.

Results

Descriptive statistics of the Likert scale results of the 2017 cohort are reported followed by themes from the four open-ended questions from the DHA evaluations. Finally, descriptive statistics for the categories of the DHA evaluation, between the 2016 and 2017 cohorts are reported.

The 2017 Results of the DHA Evaluations

In 2017, 42 of 48 second-year undergraduate nursing students enrolled in the course completed the DHA evaluation to describe their experience using the CAPE guide to evaluate a SNS. The overall mean score of the DHA student evaluation was 3.47/5.0 (SD 0.64) with students' generally choosing higher levelled responses more often. For 32 of the 34 evaluation statements, the chosen mode on the Likert scale of 1 to 5, was at level 3 or greater. The mode response "almost always" (5) occurred for 2/34 evaluation statements, "often" (4) occurred for 17/ 34 evaluation statements, "sometimes, (3) occurred for 13/34 evaluation statements," "seldom (2) occurred for 2/34 evaluation statements, and "almost never (1)" was 0/34 in the statistical analysis. Table 1 provides a list of the DHA evaluation statements and reports the mode and percentage of students who chose that mode response.

Table 1

Evaluation of the DHA Learning Experience Using the COLLES Scale* (N = 42).

Category	Evaluation statement	Mode response	%
Relevance	My learning focuses on topics that interested me	*4 (often)*	48
	My learning was important for my future practice	*4 (often)*	41

	What I learned will improve my professional practice	3(sometimes)	35
	What I learned links well with my professional practice	4 (often)	38
Reflection	I thought critically about my learning	4 (often)	57.1
	I thought critically about my own ideas	4 (often)	42.9
	I thought critically about other students' ideas	4 (often)	54.8
	I thought critically about the ideas of the scholarly articles	4 (often)	54.8
	I thought critically about the quality of health information of the media source	4 (often)	64.3
Interaction	Enjoyed sharing my thoughts/opinions with other students	3(sometimes)	47.6
	I asked other students to share their thoughts with me	4 (often)	35.7
	Other students asked me to explain my thoughts	2(seldom)	35.7
	Other students responded to my thoughts	3(sometimes)	35.7
Making sense	I valued the intent of other student's presentations	4 (often)	35.7
	I valued the presentations of the other students	4 (often)	38.1
	I understood how other groups of students searched for and appraised information	4 (often)	59.5
	I understood credibility of online health information	5(almost always)	52.4
	I understood the usefulness of online health information	4 (often)	45.2
	I understood verification of online health information	5(almost always)	47.6
	I understood the criteria to evaluate the content of online health information	4 (often)	52.4
Learner outcomes	Stimulated my thinking	3(sometimes)	42.9
	The design of the assignment encouraged me to participate	3(sometimes)	42.9

	Required me to search and appraise relevant literature	*3(sometimes)*	38.1
	Required me to use self- reflection	*3(sometimes)*	38.1
Peer Support	Other students encouraged my participation	*3(sometimes)*	35.7
	Other students/groups praised my contribution	*3(sometimes)*	35.7
	Other students/groups valued my contribution	*3(sometimes)*	33.3
	Other students/groups empathized with my learning	*3(sometimes)*	40.5
Assignment	The assignment appeared to be carefully planned	*3(sometimes)*	47.6
	There was close agreement between objectives and my learning	*4 (often)*	31.0
	Emphasize important points for assessing quality of digital health information	*4 (often)*	33.3
	The presentation was a good platform for sharing the assignment	*3(sometimes)*	38.1
	In comparison to similar assignments, this was an effective learning experience.	*2(seldom)*	33.3
	My competency in the overall appraisal of online health information*	*4 (often)*	28.6

*Adapted

Qualitative Feedback from the 2017 Cohort

The students' responses to the open-ended questions in the DHA evaluation were coded for themes. Replying to the "best part of the assignment", students reported satisfaction with the opportunity to *select* a topic related to the course. Five students identified the best part of the assignment as the CAPE guide, with one student commenting, "the best part was learning the CAPE checklist and how to use it with online resources." Responding to the open-ended question regarding their perceived learning, students acknowledged the importance of "trustworthiness" of online information, for example stating, "…not to trust everything on social media because it looks good." Students perceived improvement in their ability to be critical SNS assessors and stated that they learned "more about the importance of appraising social media." *Content validity*, *source validity*, *credibility*, and *reliability* were terms used to describe learning regarding SNS appraisal. To improve the assignment, several students suggested increasing the clarity of the assignment instruction and evaluation. Broad and varied statements were provided addressing the final open-ended question, with the majority of responses addressing the assignment instruction, for example, "we know we shouldn't rely on social media for health information."

Comparison of the 2017 and 2016 Cohorts

In comparing the evaluation of the assignment between 2017 (CAPE guide) and 2016 (TOHI checklist), no statistical significance was calculated due to changes in the nature of the assignment. However, the 2017 evaluation had higher means for all the DHA evaluation categories and there were important improvements in the overall student evaluation. In the 2017 cohort, using the CAPE guide, the leveled option "almost never" (1) was chosen 0/34 evaluation statements, and only 2 statements had modes of "seldom" (2). Whereas the students who used the TOHI checklist (2016), had modes of either "almost never" (1) or "seldom" (2) for 12/34 DHA evaluation statements.

Mean scores were computed for each of the categories in the DHA evaluation, and reported as total (TOT) relevance, reflection, interaction, making sense, learning outcome, peer support and assignment. The mean scores of the 2017 cohort are higher across all categories, but no statistical significance was calculated (Table 2).

Table 2

COLLES Categorical Mean Scores Evaluating the DHA 2016 & 2017
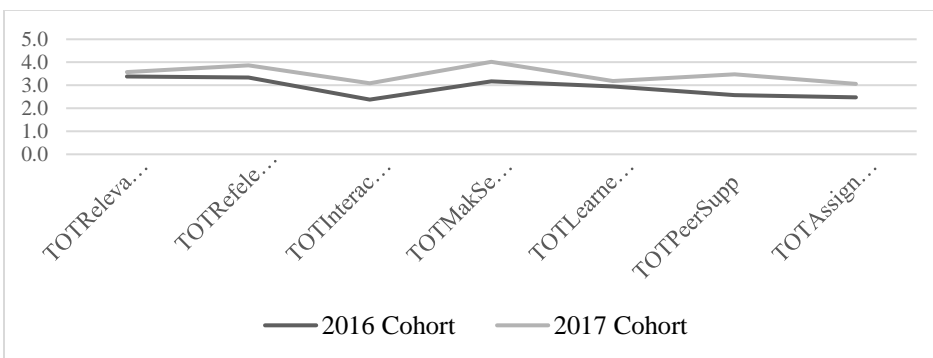
Discussion

The results indicated a strong positive attitude toward the evaluation of the assignment in the 2017 cohort, using the CAPE guide. While it is pedagogically encouraging, the data did not lend itself to reporting statistical significance. The project aim was to develop a guideline to assist students in appraising the quality of health information from SNS. Feedback from the 2017 cohort on the revised assignment indicates the outcomes to be aligned with the stated assignment objectives. In addition, over 50% of students revealed that they "often" reflected critically about their own learning, the ideas of other students, and applied the criteria to evaluate the quality of health information on SNS.

The non-binary nature of the CAPE guide directs students to consider factors influencing the quality of health information from social networking sites thoughtfully. An inquiry-based teaching pedagogy may serve the acquisition of knowledge regarding informatics successfully. However, students require practice to build the necessary capacity, to meet the CASN nursing informatics competencies (Badke, 2016). Drawing on social constructivist educational pedagogy, this assignment required student engagement with the educator, peers, and all stakeholders in their clinical setting, to create a community learning opportunity. The ongoing logical cognitive processes of the students became more obvious as they used the CAPE guide in ways that demonstrated critical thinking. Important aspects of critical thinking that applied to this

assignment, were the exploration and analysis of credibility, argument, purpose, and evidence of information discovered on SNS, followed by wise judgment (Profetto-McGrath, 2003). Students seemed to progress beyond the use of surface criteria. As previously quoted, they learned, "…not to trust everything on social media because it looks good." Reflective practices promoted student awareness of the influence of personal preferences in their selection and appraisal of SNS. Basch, Ethan, and Kecojevic (2017) support the incorporation of detailed learning assignments into relevant courses and curricula to acquaint students with the challenge of critical appraisal. Ideally, outcomes for building informatics capacities should be scaffolded across courses in each of the four year of undergraduate nursing degree programs.

Research by Kim and peers (2011) indicate that students' patterns of interaction with SNS during their assignment revealed that their choice of specific SNS sites may be associated with habitual use, fascination with the sensational, or the understanding and engagement with the SNS platforms. More understanding regarding the digital identity of these students may assist educators to refine and design strategies to improve informatics competencies. Thoughtful strategies such as these may develop student capacity to understand the use of digital technologies by different patient populations. Digital identity refers to how students present themselves online and what persona they assume as part of their online presence with a focus around what others think of them (Costa & Torres, 2011, p. 49). The results of this project provide opportunities for interesting discussions on why people who are friends on social media are much more willing to accept conclusions of a non-expert, over experts with reliable research in a given scientific field of study. In addition, questions emerge regarding how students may use their combined status as "tech-savvy youth", who are also nurses, to help patients develop eHealth literacy in ways which could result in better health outcomes for patients. In line with Koh, Brach, Harris, and Parchmen's (2013) patient engagement model, students who are eHealth literate may be better prepared to assess and teach patients (Wilson, 2016).

In health care, the use of SNS has prompted several researchers to highlight the necessity of furthering our understanding of (1) the relationship between health literacy and social media, (2) the representation and use of health content on SNS, (3) the value of "social" in SNS with online health seeking, and (4) the prospect of accessing SNS for information on population risk factors, and aspects of health monitoring (Hale et al., 2014; Kell, 2011; Kim & Xie, 2017, Thackery et al., 2013). Additionally, culture and gender are being researched as factors that may influence the way people interact with SNS for health-related issues and questions. (Rowley, Johnson, & Sbaffi, 2017; Song et al., 2016). Researchers are recognizing the importance of developing and refining criteria specifically for evaluating the quality of health information on SNS. Finally, additional research is needed to develop training programs that can increase access to appropriate health-related resources, by teaching students to make use of new technological resources (e.g., RSS feeds, Facebook, Twitter, and Instagram)

Limitations

This study has limitations, such as a small convenience sample size from one western Canadian university. In addition, the alteration of the assignment, which influenced the ability to report some statistical comparisons is a limitation.

Recommendations

Informatics competencies cannot be fostered through a singular assignment of the curriculum. Carlock and Anderson (2007) employed a skills' test and demonstrated that a cohort

of nursing students receiving information literacy sessions over time improved their skills. (Brettle & Rayner, 2013; Carlock & Anderson, 2007). Aligning with CASN's (2012) vision to increase entry to practice informatics competencies in nursing education, the UK Royal College of Nursing (2011) has also recognized the importance of informatics literacy skills for lifelong learning. Similar to this study, it is suggested by current literature that when developing nursing curricula, nursing educators and library staff need to work together to ensure that opportunities for developing and retaining informatics skills are provided for students (Brettle & Rayner 2013, p. 108). Basch et al. (2017, p. 205) affirm that the incorporation "of described learning activities into relevant courses and curricula" may possibly "familiarize students with the challenge of misinformation". Furthermore, these activities will help students to practice skills associated with identifying accurate, health-related content on the Internet" (p. 205). While Basch et al. used a learning activity that required students to compare news articles with scientific evidence in a public health course, this study had students perform a learning activity to appraise and compare social media articles with scientific evidence as part of the childbearing family course.

Conclusion

The CAPE tool has shown promise in engaging students in applying nursing informatics appraisal criteria when they use SNS sites to search for health information. Validation of this instrument is recommended in future studies. Students favoured this strategy over the binary TOHI checklist. The need remains for the ongoing refinement of tools and assignments to assist baccalaureate students in further developing informatics competencies. The objective of learning as part of the DHA is not focused on accuracy, rather on a student's ability to utilize the CAPE guide to assist and teach patients and family members to find and use health related information (Horsfall et al, 2012). No matter the health care setting, accurate evidence-informed health information is no longer siloed from the public. It is important to explore the role of public pedagogy in the use, interface, and role of SNS for scholarship and nursing education.

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