Articles

Investigating the Educational Needs of Nurses in Telepractice: A Descriptive Exploratory Study

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Abstract

Although some nursing bodies have recognized nursing telepractice as a specialty, with its own knowledge, skills, and attitudes, there is little documented evidence of the educational needs of Canadian nurses working in telehealth. However, now that telehealth has been recognized as a partial solution to Canada's health-care challenges, the area requires our attention as educators. This article is based on a study that explored the educational needs of 138 telehealth nurses practising across Canada; participants included nurses from most of the provinces and territories. The nurses were asked to complete a series of open-ended questions related to their educational needs and practice, and the data were analyzed using the methods of Miles and Huberman (1994). The study findings are discussed in the context of continuing education.

Résumé

Bien que certains organismes de soins de santé ont reconnu les soins infirmiers à distance comme spécialisation, avec son propre ensemble de connaissances, d'habiletés et d'attitudes, il existe peu de preuve documentée concernant les besoins en éducation des infirmiers et infirmières oeuvrant dans le domaine de la télésanté. Cependant, puisque la télésanté est maintenant reconnue comme solution partielle aux défis canadiens dans le domaine des soins de santé, cela exige notre attention en tant qu'éducateurs. L'article est basé sur des recherches explorant les besoins en éducation de 138 infirmiers et infirmières en télésanté pratiquant partout au Canada, dont des participants de la plupart des provinces et territoires. On a demandé aux infirmiers et infirmières de répondre à une série de questions ouvertes relatives à leur pratique et leurs besoins en éducation, et les données ont été analysées selon les méthodes de Miles et Huberman (1994). Les résultats de recherche sont discutés dans le contexte de l'éducation permanente.

Introduction

Telehealth is the delivery of care through technology that includes some element of geographical distance between the client and the provider (www.cst-sct.org/en). In some instances, the nurse may be the eyes and ears of the health-care provider, interacting directly with the client. In other instances, the nurse may triage clients, make referrals to the emergency department and/or other non-urgent care centres, and provide client education. In addition, many telepractice nurses carry out educational and administrative work, as well as manage telehealth programs within their institutions and communities.

Telehealth is increasingly recognized as a means of care delivery; however, knowledge of the educational needs of nurses who work in telehealth in Canada is limited. In response to this situation, the research team for the project described in this article conducted a national bilingual, text-based, online survey of telehealth nurses. This article reports what the nurse-participants said about the knowledge, skills, and attitudes they require for telepractice.

Literature Review

The "Tele" in Health

Interactive health consultation as it involves technology and distance has various names in the literature, including "telehealth, telemonitoring, telemedicine, and consumer health informatics" (Bakken, 2001, p. 173). Reflecting this diversity, Chambers and Andruski (2009) have designated telehealth as an umbrella term that is used "to describe a wide range of health services delivered across distances by all health-related disciplines. It encompasses the management and coordination of health services that integrate electronic information and telecommunications technologies" (p. 21).

In Canada, telehealth is growing rapidly. For example, as the nation's leading provider of client-centred health advisory and nursing tele-triage services, Sykes Healthcare Division, formerly known as Clinidata, reports responding to approximately 100,000 telephone calls a month (http://www.sykesassistance.com/page.php?cid=50). As another example, the Ontario Telemedicine Network, regarded by many as the largest video-conferencing-based health network in Canada, facilitates more than 3,000 clinical consultations and more than 300 educational and administrative sessions for health-care professionals every month (http://www.otn.ca).

Nursing is one of the health professions that practises within the broader domain of telehealth. Called telenursing by some (Grady & Schlachta-Fairchild, 2007), the College of Nurses of Ontario (CNO) calls it nursing telepractice (College of Nurses of Ontario [CNO], 2005); borrowing from the American Academy of Ambulatory Care Nursing (AAACN), the CNO further defines nursing telepractice as "the delivery, management and coordination of care and services provided via information and telecommunication technologies" (as cited in CNO, 2005, p. 3). The "tele" in nursing telepractice refers to the use of technology-based applications to respond to the health-care needs of diverse populations across distance (Canadian Nurses Association [CNA], 2001).

The Diverse Responsibilities of Nurses in Telepractice

The use of technology enables nurses to provide diverse health services for clients at a distance, including remote monitoring, follow-up evaluation, analysis of device data, remote interventions, pain management, and family support. Similar to what the literature reports for telehealth

in the United States, telehealth in Canada has a broad spectrum of services; for example, a one-year pilot project conducted in Saskatchewan reported that telehealth was utilized to deliver services and programs in child psychiatry, dermatology, patient and public education, continuing education, obstetrics, and radiology (Chamberlin & Associates, 2000). The types of care provided by nurses through telepractice include "chronic care, basic medical-surgical care, pediatric care, coronary care, psychiatric care, obstetric care, orthopedic care, neurologic care, newborn care, and rehabilitative care" (Grady & Schlachta-Fairchild, 2007, p. 269).

Bakken (2001) suggested that a key component in distance-based nurse-client relationships is the human encounter and that the primary focus of such relationships must be nursing, with technology assuming a secondary role. This idea builds on a statement by the International Council of Nurses Code of Ethics (ICN) that considers client-safety issues, the use of technology, and nurses' professional responsibilities in providing safe and ethical care (as cited in Van de Castle et al., 2004, p. 609). Regardless of the type of nursing care provided or the setting, the principal role and responsibility of nurses is to develop therapeutic nurse-client relationships while remaining accountable and adhering to the discipline's professional practice standards and ethics (Sevean, Spadoni, Strickland, & Pilatzke, 2008).

Whitten and Mackert (2005) identified another key component of telepractice when they described nurses as the "primary gatekeepers" of a tele program involving hospice patients. This image of the nurse as gatekeeper is one that presents across the telehealth literature, which is not surprising since nurses have assumed a significant role in adopting and promoting the use of telehealth technologies (Bakken, 2001; Grady & Schlachta-Fairchild, 2007; Van de Castle et al., 2004; Whitten & Mackert, 2005). Guided by the nursing-care process, telepractice nurses, like all nurses, apply their knowledge, skills, and judgment to assess and provide appropriate care to meet clients' needs. Nurses in a telehealth system can be regarded as "gatekeepers," as they are usually a client's first contact with the system and must be able to determine if a client requires a referral to other health-care providers (CNO, 2005; Grady & Schlachta-Fairchild, 2007).

As noted earlier, many nurses are also responsible for the administrative aspects of telehealth. In some instances, this work includes facilitating meetings of health administrators and leaders; in others, it involves attending to the requirements of the broader telehealth program (J. Michaud, personal communication, April 15, 2009).

Thus, although the literature is clear that telehealth technology is here to stay, it is also clear that without nurses' commitment, hard work, and leadership, the vast number of telehealth programs in Canada and elsewhere would not be possible. In many cases, these telehealth nurses are called site coordinators, whose responsibilities include nursing as well as program promotion and management. The term "site coordinator" may downplay the nursing component, but it emphasizes the multifaceted nature of nurses' work in telehealth.

Benefits and Concerns

The benefits of telehealth are not insignificant: most importantly, telehealth improves access and enables portability of health-care services, especially among populations in rural and/or remote areas (Chamberlin & Associates, 2000; Grady & Schlachta-Fairchild, 2007; Jennett et al., 2003; Staggers & Bagley Thompson, 2002; Tschirch, Walker, & Calvacca, 2006; Wakefield, Flanagan, & Pringle Specht, 2001). These benefits are congruent with the principles of the Canada Health Act (1984). Other reported benefits include cost and time savings for the provider and the client (Jennett et al., 2003; Sevean et al., 2008; Wakefield et al., 2001) and improved access to educational and professional development opportunities (Jennett et al., 2003; Sevean et al., 2008). Furthermore, Sevean et al. (2008) have suggested that telehealth is an important means of

facilitating continuing education and mentoring, which can, in turn, enhance recruitment and retention of health professionals.

Although the benefits are evident in the literature, certain concerns have also been expressed. These concerns pertain mainly to issues of competencies, education, and skills, in addition to client safety (Bakken, 2001; Grady & Schlachta-Fairchild, 2007; McNeil et al., 2003; Staggers & Bagley Thompson, 2002; Tschirch et al., 2006; Van de Castle et al., 2004; Wakefield et al., 2001), and necessitate a review of what the literature describes as the knowledge, skills, and attitudes nurses require for telepractice.

Requirements for Telepractice

In Ontario, professional nursing bodies such as the CNO regulate telepractice standards, thereby ensuring that nurses remain current in their telepractice knowledge and skills. There is no doubt that nurses who work in telehealth need knowledge and skills that are found in undergraduate programs (CNO, 2005), including nursing frameworks, theories, evidence-based knowledge, and critical thinking; however, it is respectfully suggested that they require other unique knowledge and skills.

The knowledge identified in the literature as required for working in the field of telehealth includes clinical knowledge (CNA, 2001; CNO, 2005); computer literacy (McCannon & O'Neal, 2003; McNeil et al., 2003); efficient use of information technology (Newbold et al., 2004); knowledge of a broad range of technologies (Picot, 2000; Sevean et al., 2008); the ability to integrate technological applications into clinical practice (Bakken, 2001; Grady & Schlachta-Fairchild, 2007; Lamb & Shea, 2006; Picot, 2000; Staggers & Bagley Thompson, 2002; Wakefield et al., 2001); and knowledge of particular medico-legal issues (Picot, 2000). Although nursing informatics is considered to be a specialty distinguishable from telepractice, it has also been noted as valuable for nurses working in the telehealth field (Bakken, 2001; McNeil et al., 2003; Van de Castle et al., 2004). The American Nurses Association, in its 2001 document *Scope and Standards of Nursing Informatics Practice*, defined informatics as a system that "facilitates the integration of data, information and knowledge to support patients, nurses and other providers in their decision-making in all roles and settings. This support is accomplished through the use of information structures, information processes, and information technology" (cited in Nagle, 2005, p. 16). Stated simply, informatics involves the management and exchange of health information, statistics, and other data with a well citizen, an ill client, and/or a health-care provider at any location.

Sevean et al. (2008) studied 37 rural nurses and 5 nurse-educators working in telepractice in 13 northwestern Ontario communities. An educational intervention dealing with health assessment delivered via video conferencing was evaluated. The results pinpointed learning needs in several areas: assessment skills in oncology (83%); pre- and post-operative contexts (69%); general physical assessment (59%); and hands-on experience with telehealth video and digital equipment (50%). The CNA (2001) has emphasized the further need for advanced physical assessment skills. Other skills for telehealth nursing identified in the literature and by nursing bodies include: expert teaching skills; counselling skills (CNO, 2005); communication skills (CNA, 2001; CNO, 2005; Newbold et al., 2004); interpersonal skills (CNO, 2005); organizational skills (Tschirch et al., 2006); clinical skills (CNO, 2005; Grady & Schlachta-Fairchild, 2007; Tschirch et al., 2006); and technical and troubleshooting skills (CNO, 2005; Lamb & Shea, 2006; Picot, 2000; Tschirch et al., 2006).

References to attitude were limited in the literature; however, flexibility was noted, as was an acceptance of change. Given that technology is an ever-evolving field, it follows that telehealth nurses need to be comfortable with change and act as change agents (Wakefield et al., 2001).

Although certain knowledge, skills, and attitudes for telepractice are identified in the literature, it remains unclear if telepractice is appropriate for new nursing graduates. The CNA (2001) suggested that telepractice is an advanced nursing practice, while the CNO (2005) recognized that some aspects of telepractice involve competencies not acquired within a basic nursing program. In a U.S. study of 752 nurse-executives, McCannon and O'Neal (2003) examined the information technology skills of recent nursing graduates. Their findings indicated that these new nurses required knowledge of nursing-specific software, along with skills associated with computer applications and databases. In a Web-based study conducted by Grady and Schlachta-Fairchild (2007), the knowledge and skills of 719 nurses working in telehealth in 36 countries were explored. Some respondents considered telepractice to be an advanced practice role in which basic nursing knowledge is complemented with on-the-job learning. The majority of participants supported inclusion of telehealth concepts and hands-on practice with technology within undergraduate programs; recommended content areas were "proficiency with technical tools, knowledge of standards and protocols, and competence in clinical care delivery" (p. 269).

Lamb and Shea (2006) reported that the exposure of undergraduate nursing students to telehealth technologies was limited, while others noted that the development of a consistent curriculum was lacking (Grady & Schlachta-Fairchild, 2007; McNeil et al., 2003). Several authors recommended the inclusion of telehealth-related content and skills in basic undergraduate curricula to avoid the risk of nursing becoming irrelevant or obsolete in today's changing healthcare environment (Clarke, 2002; Grady & Schlachta-Fairchild, 2007; McCannon & O'Neal, 2003; McNeil et al., 2003; Staggers & Bagley Thompson, 2002). Finally, the creation of a standard certification for telepractice has been suggested as an important step for helping nurses provide competent care through telehealth modalities (Grady & Schlachta-Fairchild, 2007; Staggers & Bagley Thompson, 2002; Wakefield et al., 2001).

Overall, although the literature is clear that certain knowledge, skills, and attitudes are required for competent nursing telepractice (CNA, 2001; CNO, 2005; Grady & Schlachta-Fairchild, 2007; McCannon & O'Neal, 2003; Picot, 2000; Staggers & Bagley Thompson, 2002; Sevean et al., 2008; Tschirch et al., 2006; Wakefield et al., 2001), there is limited research into these three areas. Further, research studies documenting Canadian nurses' perceptions of their educational needs for competent telepractice are minimal. The discrepancies noted by Canadian professional nursing bodies, such as whether telepractice is suitable for new graduates or whether it is an advanced practice role, highlight the need for more exploration. Based on the review of the literature, these findings represent a gap in nursing knowledge.

The Study

The purpose of the study discussed in this article was to explore the educational needs of Canadian nurses practising in telehealth. The research was guided by the question: What knowledge, skills, and attitudes are needed for telehealth nursing practice? As well as being of value to practitioners, educators, and administrators in the fields of nursing education and health education in general across Canada, the study will contribute to the educational preparation of nurses who may want to pursue a career in telepractice. Furthermore, it is part of the growing body of literature that recognizes the contribution that telehealth can make in meeting today's healthcare challenges.

Study Method

Instrument

This descriptive exploratory study used a two-part tool, called the Telehealth Nurses' Educational Needs Assessment Tool (THEN-AT). Part I gathered demographic information, while Part II focused on participants' perceptions and recommendations, based on 14 topic areas (see Appendix A). In some cases, the topic areas were complementary. All of the questions in Part II were open ended, for participants to answer in their own words.

Designed by the research team, the two parts of the survey built on a review of the literature and on consultations with national telehealth experts, conducted through e-mail and telephone conversations. Input was also gathered through face-to-face contacts made at the annual conference of the Canadian Society of Telehealth (CST) (one member of the research team had worked with a large Canadian telehealth organization). The survey was prepared in both French and English and was made accessible to participants via a Web-based tool called Survey Monkey. Participants could also request a print version of the survey.

Procedure

Recruitment of participants occurred through purposive sampling techniques, with assistance from the Canadian Society of Telehealth (CST), the Ontario Telehealth Network (OTN), the Canadian Association for University Continuing Education (CAUCE), and the Canadian Network for Innovation in Education (CNIE). Various provincial and territorial nursing regulatory bodies were also contacted. All of these organizations were critical to the recruitment process.

Potential participants received an invitation letter that included a direct link to the secure Web site where the THEN-AT was located. Once there, participants were again provided with a comprehensive explanation of the study, which emphasized its purpose, benefits, and perceived risks. Participants were reassured that all information they provided would remain confidential and anonymous; a signed consent form was not required, as the decision to complete the questionnaire was regarded as informed consent. Data collection took place within a four-month period, from January to April of 2009. Permission to conduct this research was obtained from the Research Ethics Board at Laurentian University.

Data Analysis

Descriptive statistics were used to generate a participant profile. Data from the open-ended survey questions were analyzed by the researchers, using Miles and Huberman (1994). Essentially, the approach involved three concurrent flows of activity: (1) data reduction, whereby participant responses were coded and sorted into individual clusters of varying main themes; (2) data display, whereby participant responses were organized, compressed, and assembled into various tables and figures, which permitted conclusions to be readily visible and easily drawn; and (3) conclusion drawing/verification, whereby conclusions were verified and validated through the use of repeated group readings of participant responses, multiple group discussions, and debate.

The research team met frequently during the initial analysis stage, when participant responses were explored and numerous descriptive codes were generated. Once these codes were identified, a more in-depth analysis was conducted, which led to the development of categories and subcategories to organize and display data. Data excerpts were used to illustrate meaning and to support interpretation of findings (Marshall & Rossman, 1995).

The findings presented in this article focus on a subset of 8 of the 14 topic areas contained in THEN-AT; these areas were explored in survey questions 1, 2, 3, 5, 6, 7, 8, and 13 (see Appendix A).

Study Findings

Demographics

The study sample included 138 nurses from across Canada, all of whom self-identified as currently working or having recently worked in telehealth. As shown in Table 1, most of these nurses were from Ontario (27%), followed by Saskatchewan (16%), Newfoundland and Labrador (14%), Alberta (11%), New Brunswick (11%), and British Columbia (10%). Nurses from other provinces and territories, with the exception of the Northwest Territories and Yukon, were also represented, albeit in limited numbers.

Participants were experienced nurses, with the vast majority (87%) having worked for at least 10 years or more as registered nurses. Many participants reported being experienced in telehealth nursing, with a third (33%) having at least 5 to 9 years of telehealth experience. Most participants worked either in a telehealth call centre (41%) or in an acute-care hospital (28%); 22% of participants worked in other settings. In reviewing the job descriptions that participants entered in the "Other" category, three new categories emerged: college/university settings; regional/provincial health-care agencies; and private industry.

Most participants were either diploma (41%) or baccalaureate prepared (36%); at the graduate level, 7% of participants reported having a master's degree in nursing, 13% had a non-nursing master's degree, and 3% had a PhD. Almost 40% indicated they had never attended an educational session specific to telehealth nursing.

Core Categories

Analysis of the open-ended questions revealed four core categories; a general overview of these categories is depicted in Figure 1. A more-detailed presentation of each category follows.
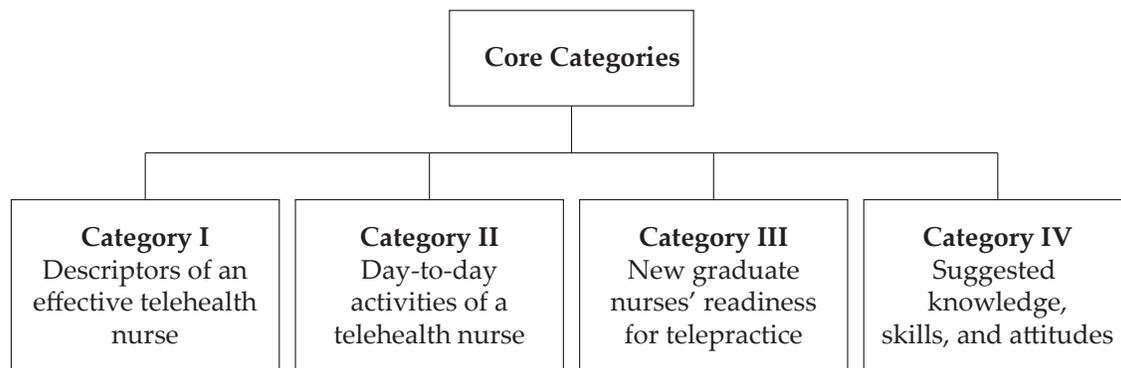

Figure 1: Core categories

Table 1: Summary of Participant Demographics

Demographic Variable	Category	f
Province/territory of primary employment (*n*=138)	Alberta	11
	British Columbia	10
	Manitoba	4
	New Brunswick	11
	Newfoundland and Labrador	14
	Northwest Territories	0
	Nova Scotia	4
	Nunavut	1
	Ontario	27
	Prince Edward Island	1
	Quebec	1
	Saskatchewan	16
	Yukon	0
Level of education (*n* =132)*	Diploma of Nursing	41
	Baccalaureate Degree in Nursing	36
	Master's Degree in Nursing	7
	Master's Degree Non-Nursing	13
	PhD	3
Years of employment as a registered nurse (*n* = 131)*	< 1 year	0
	1 – 2 years	0
	3 – 4 years	5
	5 – 9 years	8
	10 – 19 years	17
	20+ years	70
Years of employment in telehealth (*n* = 122)*	< 1 year	12
	1 – 2 years	23
	3 – 4 years	25
	5 – 9 years	33
	10 – 19 years	7
	20+ years	0
Previous education/training in telehealth nursing (*n* = 133)*	Yes	61
	No	39

*Varied numbers of respondents

Category I: Descriptors of an Effective Telehealth Nurse

Participants were asked to describe an effective telehealth nurse, which was broadly defined as a nurse who is competent in providing health-care services to individuals, families, and communities from a distance through technologies. The majority of participant responses fell into four subcategories, as depicted in Figure 2.
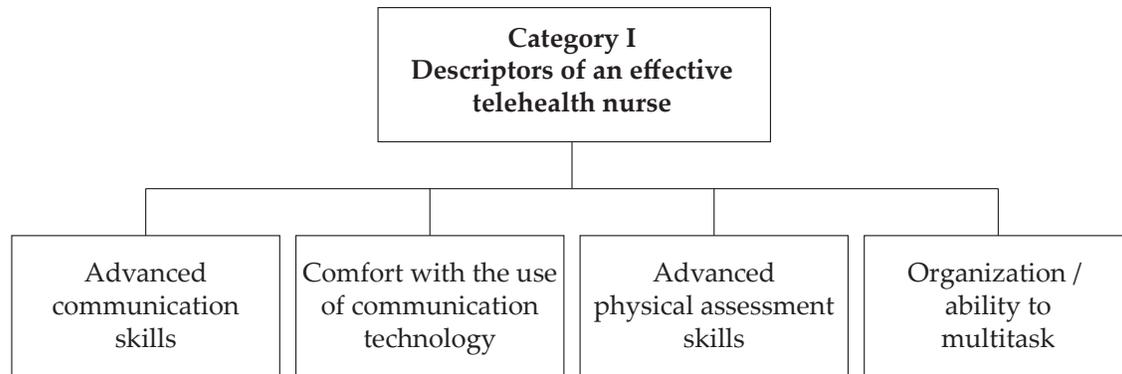

Figure 2: Category I: Descriptors of an effective telehealth nurse

The majority of the study respondents emphasized the need for nurses to have advanced communication skills. One respondent depicted this need as follows:

> The telehealth nurse MUST be a good communicator. They must also have a good imagination to be able to visualize in his/her mind the picture the client is giving. This "picture" is based on what the client is saying, what they are not saying, and the quality of their voice. This is very different from a typical [face-to-face] communication, since the client cannot actually see the nurse's face, posture, etc., just as you cannot see theirs. The telehealth nurse needs to be conscious of not only how he/she words a question, but also their tone of voice.

Comfort with the use of technology was another dominant message and was highlighted by this respondent, who said:

> An effective telehealth nurse understands that care delivery is first and the technology that is used to provide that care comes second. However, that said, they still need to be comfortable with the technology they are using so they can have credibility in the IT [information technology] world, and be able to hold their own when collaborating with IT professionals.

The final two descriptors in this subcategory—advanced assessment skills and the ability to multi-task—were viewed as essential for an effective telehealth nurse. These ideas are outlined in the following comment:

> [The telehealth nurse] needs to be highly experienced and have very strong advanced physical assessment skills. [They must be] able to multi-task, triage, prioritize activities, and case manage multiple issues simultaneously. Strong organizational skills are a must!

Category II: Day-to-Day Activities of a Telehealth Nurse

There was strong support for the finding that the day-to-day activities of nurses working in telehealth are varied. Participants identified program coordination, quality assurance, call centre/telephone triage, and client monitoring/disease treatment as their main activities. These activities are summarized in Figure 3.
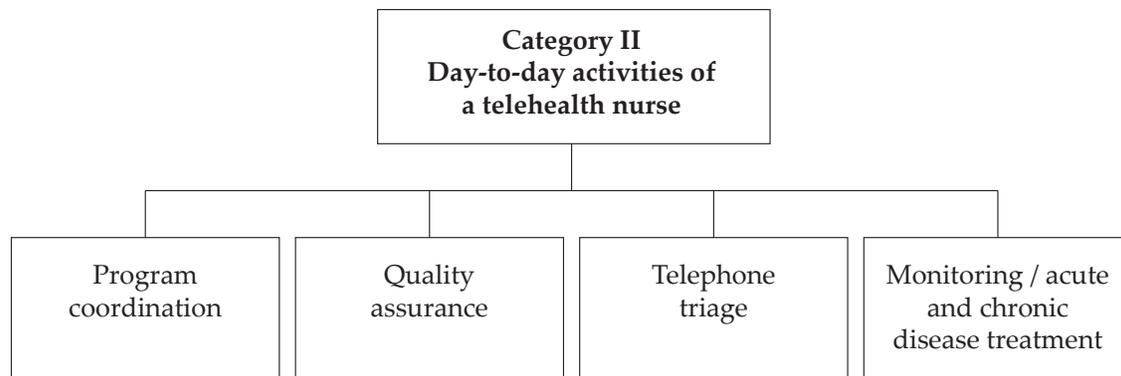

Figure 3: Category II: Day-to-day activities of a telehealth nurse

The respondents who identified program coordination were likely nurses in acute-care settings who managed telehealth programs and those in management positions in call centres. The following excerpt illustrates the type of activities conducted by nurses involved in program coordination:

> In my position as coordinator, I work closely with telecare nurses who are responsible for answering the telephone. I supervise, troubleshoot, liaise with management, and am available for questions. I am also responsible for orientation of new staff as well as in-service for staff. I take calls frequently at busy times and when there are staff shortages.

Quality assurance, the second subcategory, included activities such as following established protocols and careful documentation, as illustrated by this respondent's comment:

> One of my responsibilities as a telehealth nurse is to regularly conduct QA [quality assurance] reviews to ensure safe standards of practice are maintained as well as clinician/patient satisfaction with our service.

These nurses spoke about long hours and the routine of working on the telephone. They also discussed the diversity of their clients and their health concerns. Although these nurses spoke about long hours and the routine of working on the telephone, they also discussed the diversity of their clients and their health concerns. As one participant stated:

> I triage clients with symptoms, evaluate, and make decisions regarding their care based on the symptoms presented, as per our approved protocols and using clinical nursing judgment decisions. I also provide teaching related to certain conditions and provide emotional support and reassurance to clients.

In the last subcategory, nurses working in hospital and clinic-based settings described their client-management activities. They noted working with specialists at remote centres, as well as on specific projects such as remote monitoring, delivering rural palliative consultation services,

and patient and family education. Client-management activities such as these were supported by the following participant excerpts:

> I facilitate consults with clients who come to our studios to access specialists from larger centres.

> I work within a remote monitoring and home telehealth initiative. My primary responsibilities are home monitoring of people who have CHF [congestive heart failure].

Category III: New Graduate Nurses' Readiness for Telepractice

The question of whether new graduate nurses are adequately prepared for telehealth drew strong opinions. Most participants said no. Some went on to comment that telepractice requires advanced skills and experience over time, compared to the knowledge and skills of new graduate nurses. For example, two participants wrote:

> Nursing is a career that builds on itself. While [baccalaureate] education is an important first step, nothing but experience can build a competent, well-rounded nurse that this field requires.

> Telehealth nursing is a specialty area. There is no substitute for years of experience as a nurse and the expert knowledge and insight that this brings to one's practice.

Although the majority of participants said no, a small number of respondents thought that new graduates were well prepared to handle the challenge of telehealth nursing. As one of these respondents noted:

> Yes, they are technologically savvy, tend to be able to catch on quickly, and are very open-minded. They are prepared to work to nursing codes of ethics and standards of practice, have a strong base of nursing knowledge, and are able to apply their knowledge and skills to provide safe, competent, and ethical care.

A few others had more "middle-of-the-road" responses to this question; for example, one commented:

> Yes…with the right training, precepting, coaching/mentoring . . . new grads tend to have the necessary computer skills right out of school that enables them to smoothly transition into this role.

Category IV: Suggested Knowledge, Skills, and Attitudes

This final category details the knowledge, skills, and attitudes that the respondents thought were important for competent telepractice (Figure 4). When an item fell into more than one subcategory, the researchers discussed the appropriate subcategory for reporting purposes. The key findings discussed in this section are supported by participant excerpts.
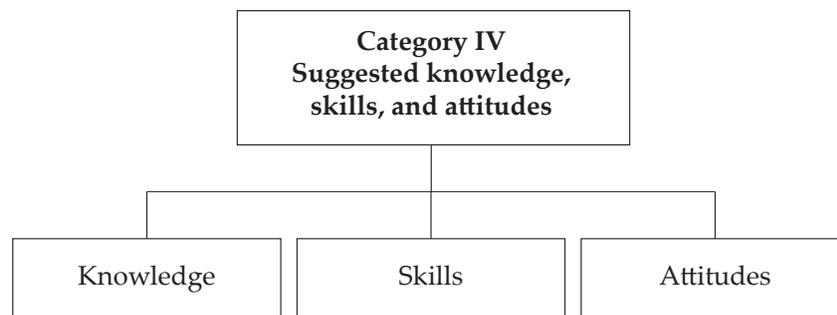
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┌─────────────────────────┐
│      Category IV        │
│  Suggested knowledge,   │
│  skills, and attitudes  │
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Knowledge	Skills	Attitudes

Figure 4: Category IV: Suggested Knowledge, Skills, and Attitudes

Knowledge – A number of dominant knowledge areas were identified by the study participants: broad clinical knowledge and experience, as well as specialized expertise dependent upon the specific telehealth setting; in-depth knowledge of pathophysiology and pharmacology; nursing informatics; legal and professional issues (including privacy and risk management); cultural safety; process knowledge, including effective scheduling practices; and project management. The last knowledge area—project management—was identified principally by the nurses working in hospital and clinical settings, rather than those working in telephone centres.

The following participant excerpt addresses legal issues:

> [The telehealth nurse] needs to be aware of the legal issues relating to point of care. [For example, a nurse in New Brunswick who provides telehealth services to a client in the Northwest Territories (NWT) must be a member of the nurse regulatory body in the NWT, even though he/she does not actually live there.]

> Generally, respondents commented on the value of knowing about informatics as it pertains to their day-to-day activities and on "understand[ing] how an electronic health record can assist in documentation [and] how e-health can be maximized." They also emphasized the importance of "a very solid knowledge base regarding pathophysiology of various acute and chronic diseases, especially diabetes, heart disease, and asthma."

Skills – Identified skills included advanced assessment skills; advanced therapeutic communication skills; skills related to creating effective relationships in a virtual environment; advanced critical-thinking and decision-making skills; teaching skills, including best practices in distance education; and skills to deal with challenging clients, such as those who are suicidal, abusive, or acting inappropriately sexually. Respondents who worked in call centres tended to identify skills for handling difficult clients.

The importance of advanced assessment skills and critical thinking was confirmed in the following respondent excerpts:

> Physical assessment skills need to be adapted because we can no longer rely on what we see, smell, or palpate. We need to re-learn how to listen so we can hear what the client is saying (and not saying). We also need to learn how to interpret certain sounds as opposed to what we can see, smell, or feel.

> Must have advanced remote physical assessment skills—usually, nurses learn assessment techniques that require "hands on." A telenurse needs to use other senses and thinking skills to be able to assess a patient remotely.

> The nurse needs to have strong critical-thinking skills so that they can read in between the lines.

Other suggested skills included program planning and delivery skills and skills related to technology and technical troubleshooting. Respondents working in telephone-based centres specifically identified their need for strong keyboarding skills, in combination with effective listening and speaking skills, while respondents in general spoke about the need for technical skills and skills related to new software programs and applications. As these two respondents noted:

> Must have good keyboarding skills, as well as know how to operate the various communication devices that are used in practice (i.e., video-conferencing equipment, cameras, in-home monitoring equipment).

> The nurse needs to understand what it is like for the patient at the far end and how to adapt their communication approach when using technology.

Attitudes – As in all nursing settings, the participants stressed the importance of an overall attitude of professionalism. More specific attitudes were also noted: being non-judgmental; being self-directed; being able to empower self and others; and having a "sense of vision" with respect to the advantages of telehealth in facilitating access to health-care services, especially for clients in rural and remote areas. The following two participant excerpts support these findings:

> Understanding that distance doesn't dictate the scope of practice; we have been providing telenursing for many years; it's only recently that this term is being recognized; bedside and face-to-face nursing is not the only way that we help our clients.

> A positive, respectful, caring, compassionate, understanding attitude. The person on the other end of the line will know by the tone of voice if the nurse isn't compassionate or caring and they won't respond as well. The telehealth nurse has such a minimal amount of time to develop that nurse-client relationship of trust and understanding that if you don't have the right attitude it destroys that from the start.

Participants' attitudes toward technology included a belief in people first and technology second, as well as a sense of confidence in technology, as suggested by this participant:

> The nurse should definitely have a positive attitude toward (and be comfortable with) the use of technology as a way of delivering health services."

Participants also emphasized the idea that telepractice is a "real" form of nursing practice. The following participant excerpt reveals the importance of this attitude toward telepractice.

> [The nurse] must have a positive attitude about what they are doing… Yes, this is real nursing! Telehealth nursing is not simply a place for old retired nurses who either have a bad back, latex allergy, or tired feet! We are making a very important contribution by improving access to health care for all Canadians!

Discussion

The study revealed several interesting findings. First, the nurses had considerable life and professional experience. Second, they had entered nursing telepractice late in their careers, with 70% of them having more than 20 years' work experience. Finally, the participants suggested that retention of experienced nurses in the health-care system may be enhanced by telehealth opportunities.

Their overall opinion that new graduates are not ready for telepractice is an interesting finding and merits careful consideration based on the fact that today's graduates tend to be technically "savvy." As well, new graduates may have had exposure to health informatics in undergraduate curricula and be able to assist their more experienced nursing colleagues in research and theory areas, such as health promotion, family nursing theory, and population health. Thus, although the majority of participants were clear in their opinion that prior nursing experience is extremely important in achieving readiness for telepractice, a new graduate may be able to make the transition to telehealth nursing reasonably quickly with focused preparation. That said, the literature indicates that there may be insufficient opportunities for telepractice education and that this is "a major barrier to nurses being able to acquire the necessary knowledge and skills to incorporate new technologies into their practice" (Edirippulge, 2005, as cited in Lamb & Shea, 2006, p. 55).

A related finding is that 40% of the study participants did not possess a baccalaureate degree in nursing. Given the changes to the entry-to-practice requirement recently implemented across Canada, which have coincided with the retirement of nurses belonging to the baby-boom generation, this demographic will gradually change. This issue highlights two additional questions: (1) What constitutes adequate preparation for telepractice nursing beyond experience? and (2) Who should provide this preparation? As indicated in the literature review, the answers to these questions are not clear. For example, the College of Nurses of Ontario (CNO, 2005) has stated that "some nursing telepractice requires competence, expertise and knowledge beyond that which is obtained in a basic nursing program" (p. 9). At the same time, the CNO has not indicated recommended levels for these competencies—post-RN but not baccalaureate level; post-RN baccalaureate degree level; or graduate level (e.g., master's level)—nor has it indicated who should provide this education—colleges, universities, telehealth organizations, hospitals, and/or nursing associations.

As for the views shared by the participants about their educational needs, two key points emerged. First, although some of these needs are best met through experience, others can be met through education. Second, based on the life stage of the nurses in the study, it seems reasonable that education aimed at ensuring competence and confidence with technology will be well received by them. As telehealth continues to become more sophisticated, further and different kinds of education will become increasingly necessary.

The researchers recognize that there are existing educational opportunities for nurses working in telehealth. Examples include the online telehealth courses at Centennial College in Toronto; a recently launched online module for e-health through the Registered Nurses Association of Ontario (RNAO); and the Health Informatics Training System (HITS) offered online through the Canadian Nursing Informatics Association, which is jointly endorsed by Canada's Health Informatics Association (COACH) and the CNA. There are likely additional avenues to provide ongoing educational opportunities for nurses working in telepractice.

Although the participants in this study were not asked about a preferred educational format, a few of them commented on continuing education delivered through technology. This delivery framework may be appropriate for two reasons: first, technology-based educational

opportunities offer flexibility for nurses to remain in their communities (Cragg, Andrusyszyn, & Fraser, 2005); and second, in Canada, there may be value in connecting the limited number of nurses in telehealth, who are also geographically dispersed across the country, and, in turn, facilitating the construction of communities of practice (Byrne & Keefe, 2002; Young & Ireson, 2003).

  A few observations about the curriculum for an educational program are appropriate here, although curriculum development was not the purpose of this study. Based on the study participants' recommendations, a continuing education program might emphasize a number of areas: theoretical knowledge about telepractice; professional competency expectations; clinical practicum in telehealth settings; therapeutic communication techniques and physical assessment skills, using telehealth technologies; the organizational and management components of telehealth (Newbold et al., 2004); and hands-on practice with technology in general (Grady & Schlachta-Fairchild, 2007; Sevean et al., 2008). Such a program would be in accordance with this CNO (2005) statement:

> Competence and effectiveness in telepractice nursing may be enhanced through a focused formal educational program and/or adequate orientation. Formal telepractice nursing education programs that provide a review of principles associated with communication and interviewing, and introduce technologies used in telepractice, offer opportunities to develop and/or enhance competencies. (p. 9)

Limitations

The study described here has provided an informative picture of the educational needs of nurses working in the expanding field of telehealth, but it has also had some limitations. Although purposive sampling was an appropriate strategy for collecting data congruent with the research question, not all Canadian provinces and territories were represented. Future research would need to incorporate strategies to recruit French-speaking participants, as the representation from this population was small. Piloting of the survey would have helped to expand the choices provided for the questions that explored the type of facility, primary responsibilities, and current positions. Finally, some might argue that telenurses who work in telephone-based call centres should be studied separately from those who work in clinics and hospitals. Although the research team acknowledges this perspective and plans to conduct studies that will focus more on the two groups, it is important to note that there are significant similarities between the two groups, the most significant of which is that each involves nursing that is supported by technology and bridges distance.

Recommendations

The study findings emphasize that telepractice nursing requires a breadth of nursing experience, advanced assessment skills, excellent communication skills, innovative and creative attitudes, and competence with technology. Much of telepractice is team based and requires working collaboratively with experts from health, education, technology, and even business.

As stated earlier, some of the possible providers of educational sessions and programs on telehealth could include colleges, universities, telehealth organizations, hospitals, and nursing associations. Each has advantages. For example, universities are where nurses acquire their baccalaureate education, and in many instances, they have robust continuing-education programs in partnership with schools of nursing, community agencies, and other workplaces. As Clarke (2002) suggested, "For education to be effective, advances in workplace application must parallel advancements in the education agenda" (p. 11). Continuing education facilitated by universities might be a vehicle for advancing the progression of telepractice to a graduate level; it could also lead to opportunities for both nursing-specific and interdisciplinary research partnerships and to the further development of evidence-informed nursing telepractice (Grady & Schlachta-Fairchild, 2007).

Telehealth organizations may have other advantages. These include knowledge and skills based on the most up-to-date technologies and the ability to offer contacts and networks across regional and provincial boundaries, which could then lead to the creation of extensive communities of practice for support. Regardless of the educational provider, programming must be flexible and responsive to the learning needs and lifestyles of busy adult learners (Knowles, 1978, 1980; Snow, 1977).

Further research is needed to determine appropriate levels of formal educational preparation for nursing telepractice. Additionally, research is required to determine those best positioned to offer these programs and the most appropriate methods of delivering them. Other work could include conducting this study with a larger sample from Canada's vast geography and exploring the educational needs of different telepractice nursing groups, such as those who work in call centres versus those who work in other health-care settings. Finally, as nursing telepractice expands into the domain of telehomecare, this area will also require research.

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Appendix A

THEN-AT Survey Questions

1. What exactly do you "do" within your role as a telenurse on a very practical day-to-day basis?

2. In your opinion, what makes an effective telenurse?

3. In your opinion, do you think that NEW nursing graduates are adequately prepared to practice competently within the telenursing field?

4. In general, what do you recommend be included in continuing education programs for nurses to prepare them for a career in telenursing?

5. What specialized KNOWLEDGE should a nurse have so that he/she can practice competently in telenursing?

6. What specialized SKILLS should a nurse have so that he/she can practice competently in telenursing?

7. What ATTITUDES should a nurse have so that he/she can practice competently in telenursing?

8. In your opinion, what makes an effective telenurse?

9. What are the main stressors of being a telenurse?

10. What kinds of limitations and/or barriers do you currently experience in your role as a telenurse?

11. In your opinion, what are the main benefits of working in the telenursing industry?

12. How do you anticipate that telenursing services in your province/territory might expand or evolve in the future?

13. What additional KNOWLEDGE, SKILLS, and/or ATTITUDES will be required of telenurses so that they can meet the demands of telenursing in the future?

14. Do you have any other comments?

NOTE: Some of the study participants expressed dissatisfaction with the term "telenurse." These participants felt that they are nurses first, and technology is simply the means. The researchers respectfully acknowledge this and will use alternative language in future studies.

BIOGRAPHIES

Lorraine Carter is a professor at Laurentian University in Sudbury, ON. She has particular expertise in online education for health professionals, continuing and distance education, and telehealth. Her doctoral work examined the critical thinking and writing experiences of post-RN nurses taking a baccalaureate-level online course.

Lorraine Carter est professeure à l'Université Laurentienne de Sudbury, en Ontario. Elle possède une expertise particulière en éducation en ligne pour les professionnels de la santé, l'éducation permanente et à distance, et la télésanté. Son travail de doctorat examinait les expériences de pensée et de rédaction critique des infirmiers et infirmières   diplômés qui suivent des cours en ligne au niveau du baccalauréat.

Shirlene Hudyma has been a full-time faculty member with the Laurentian University School of Nursing since July 2008. Prior to this, she worked part-time as a faculty advisor and clinical educator throughout all year levels of the BScN program.

Shirlene Hudyma est membre à temps plein de la faculté de l'école des sciences infirmières de l'Université Laurentienne à Sudbury en Ontario depuis juillet 2008. Auparavant, elle avait œuvré auprès de l'école des sciences infirmières à titre de conseillère pédagogique à temps partiel et formatrice clinique dans son programme de diplôme en sciences infirmières.

Judith Horrigan is a full-time faculty member at the Laurentian University School of Nursing. She has over 25 years of experience in a variety of urban, rural, and remote clinical settings. Her research interests include distance education, occupational health, and health policy research.

Judith Horrigan est membre à temps plein de l'école des sciences infirmières de l'Université Laurentienne de Sudbury, en Ontario. Judith possède plus de 25 ans d'expérience dans une variété de contextes urbains, ruraux et dans les lieux isolés. Parmi ses intérêts de recherche figurent l'éducation à distance, la santé et la sécurité au travail, et la recherche sur les politiques en santé.