Out of Necessity: Oncology Nurses' Experiences Integrating the Internet Into Practice

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Purpose/Objectives: To understand the experiences of oncology nurses who use the Internet in their practice when their patients use the Internet for cancer care.

Research Approach: Heideggerian hermeneutics branch of phenomenology.

Setting: Oncology nurses were interviewed at their practice settings (n = 13), the researcher's office (n = 5), or their homes (n = 2).

Participants: 20 nurses recruited from local and national Oncology Nursing Society meetings. Their practice sites were cancer centers, hospitals, clinics, veterans centers, communities, and Internet companies.

Methodologic Approach: Data were collected by informal interviews that provided the narrative stories for hermeneutic analysis.

Main Research Variables: Internet use for cancer care, nurse-patient relationships, and Internet use for nursing practice.

Findings: Five related themes emerged: (a) varying degrees of Internet integration in the practice environment, (b) changing schools of thought, (c) developing Internet use for professional practice, (d) redefining relationships, and (e) new nursing skills. The two constitutive patterns are (a) integrating Internet into practice out of necessity and (b) reflecting historical changes in practice patterns influenced by technology.

Conclusions: Nurses who use the Internet are developing new practice patterns that incorporate technology and foster nurse-patient partnerships. Practice environments either foster or hinder technology use. Nurse computer competency is essential.

Interpretation: Findings reflect the influence of adapting technology on practice. Internet use is a catalyst for redefining nurse-patient relationships into partnerships. The movement suggests a need for nurse Internet competencies, environmental support, and consideration for patient access (digital divide). Evaluation of content in nursing curricula and of patient competencies is advised. Further research on patient experiences is recommended.

Key Points . . .

➤ Internet use encourages patients' desire for involvement in care decisions.

➤ The necessity for nurses' Internet use is patient driven.

➤ Nurses' computer competencies influence Internet use, but the institutional culture helps or hinders.

➤ Nurses should be aware of the social influence of technology in encouraging partner relationships.

P atients and nurses increasingly use the Internet for information and communication (Cobb, 2003); however, little is known about nurses' and patients' actual experiences of using the Internet for cancer care. The aim of this study was to discover the meaning of Internet use by oncology nurses, through phenomenologic interpretation of the narrative stories, to gain an understanding of the common meanings, shared experiences, and practices of oncology nurses who use Internet technology. This knowledge will inform oncology nurses of the value of the Internet as well as the limitations that the technology may impose on their practice. This may facilitate understanding of a technology-based nursing practice.

Literature Review

In 2002, 52 million Americans (55% of Internet users) used the Internet to obtain health-related information, according to a study of Internet life by the Pew Internet and American Life Project (Pew Project) (2002). In addition, 47% of health seekers reported that the information they obtained had a direct effect on the decisions they made about their health care and interactions with healthcare providers. In 2003, the Pew Project reported that the number of health seekers increased to 80% of those online. Nurses increasingly are encountering patients who have searched the Internet for information. In a study of Internet use, Jadad et al. (2001) reported that 100% of physicians, 72% of nurses, and 47% of patients had Internet access and 90% of physicians and nurses reported that patients brought Internet information to them.

In a 10-year review of cancer-related patient education research from 176 synthesized articles, Chelf et al. (2001) reported that patients with cancer sought information when making treatment decisions and managing side effects. Patients preferred obtaining information through discussion with healthcare providers, yet written material supplemented learning. However, Chelf et al. did not evaluate Internet use for obtaining cancer care information.

Information technology offers new ways to deliver health care to patients with cancer (Ehrenberger & Brennan, 1998). In

addition to obtaining information on the Internet, patients use Internet cancer support groups. These online support groups are used for increasing feelings of hope and group cohesion (Klemm & Nolan, 1998), giving information and opinions, and encouraging one another. Patients used personal experience, humor, and prayer in their communications (Klemm, Reppert, & Visich, 1998). They also discussed their conditions, shared personal concerns, and offered support (Weinberg, Schmale, Uken, & Wessel, 1996). In one study, 40 patients with breast cancer using computer-based support had less depression, anxiety, and distress than the control group without computer support (Vandenberg, Meads, & Engel, 1997). In a study of communication on a breast cancer online discussion group, information exchange, social support, and personal empowerment were identified as important to consider in future studies of patient-provider interactions (Sharf, 1997).

Surveys of nurses' Internet use as identified by Cobb (2003) indicated that only 2% of nurses surveyed (N = 1,072) never used the Internet and 50% used it one to five hours per week for the purpose of obtaining drug and health information and e-mailing other professionals. Fogel (2002) suggested that advanced practice oncology nurses use the Internet as a clinical resource, provided that quality is scrutinized. Much of the literature describes the "how to" of Internet use, including skills needed (Ward, 2001), suggested Web sites (Harris, 2000), guidelines for e-mail with patients (Kane & Sands, 1998), and concerns about the quality of information and confidentiality of e-mail (Berland et al., 2001; Eysenbach, Powell, Kuss, & Sa, 2002; Jadad & Gagliardi, 1998). Few studies, if any, described the qualitative experiences of nurses. Estabrooks, O'Leary, Ricker, and Humphrey (2003) surveyed Canadian nurses regarding their Internet use and found that nurses were using the Internet increasingly at home but fewer used it at work. However, this study did not investigate the experience of using the Internet in terms of cancer care for nurses and patients.

Although research has shown that patients with cancer use a multitude of cancer-related Web sites to access information and support, little research, if any, has examined the experience of nurses as providers when patients approach the interaction with information gleaned from the Internet. In addition, few studies have examined the experience and impact of Internet use for nurses in their own practice. The purpose of this study was to understand the experience of oncology nurses using the Internet for cancer care through phenomenologic interpretation of their narrative stories. This unique approach of qualitatively studying the Internet experiences of nurses adds to the body of knowledge of a technology-based nursing practice. By discovering how their experiences affect nursing practice, insight is gained into what works best, what is useful, and how nurses can best integrate Internet use into their nursing practice.

Methods

The methodology for this study was Heideggerian hermeneutics (Diekelmann, Allen, & Tanner, 1989; Heidegger, 1962), a phenomenologic approach in which a researcher attempts to uncover the common meanings of everydayness of an individual's life with the goal of discovering the meaning embedded in the text. Heideggerian hermeneutics claims that humans understand and operate contextually within a set of historical and temporal relationships that are rendered explicit

by interpretation through language (Heidegger). Heidegger explained that through a hermeneutic process, a researcher systematically can interpret and bring to light the meaning of people's experience. By interpreting the narrative stories of oncology nurses' experiences with the Internet, researchers are able to be involved and understand their everyday lives and thus have background understandings of the individual's practical knowledge of his or her world. From this background emerge possibilities and potentialities that are part of today's culture and society. This understanding of what is possible allows the researchers to be engaged in the participants' practical world that usually is unarticulated (Plager, 1994).

Sample, Settings, and Procedures

A purposive sample of 20 oncology nurses was recruited for this study. After approval by the Social and Behavioral Science Institutional Review Board at the University at Buffalo in the State University of New York, researchers attended a local chapter and national Oncology Nursing Society meetings, explained the study, and asked for volunteers. The researchers obtained signed consent and interviewed the nurses at a time and location that was convenient to them, including their practice settings (n = 13), the researcher's office (n = 5), or their homes (n = 2). The primary investigator conducted all of the interviews. The nurses each received $25 compensation for participating. Five of the interviews with the recruits from national meetings were conducted over the telephone for the participants' convenience because they had no free time at the meetings. The face-to-face and telephone interviews were of similar quality. The interviews lasted approximately one hour and were recorded on audiotape and transcribed. The original audiotape data were stored in the investigator's office in a locked file and were destroyed at the end of the study. Nurses were asked to "share stories of their experiences when patients use the Internet" and "describe the provider-patient interactions when patients have Internet access and when they do not." They also were asked to describe their own experiences using the Internet in their practice.

Analysis

Narratives used in this study were interpreted using a seven-stage hermeneutic process (Diekelmann et al., 1989) (see Figure 1). The research team included two doctorally prepared and one master's-prepared researchers, two of whom were oncology nurses. A visiting European oncology nurse scholar participated in some of the analyses.

The multiple levels of interpretation exposed conflicts and inconsistencies in the analysis and eliminated unsubstantiated meanings. Although no single correct interpretation exists, continuous examination of the whole and parts of the text with constant reference to the text ensured that interpretations were grounded and focused (Diekelmann & Ironside, 1998).

To maintain scientific rigor in analysis, careful attention to the text, use of team approach for analysis, and verification of the findings with a group of 10 participants from the original interviews reduced researcher bias. In addition, findings were confirmed in the text by use of verbatim quotes.

Findings

Of the 20 oncology nurses who told their stories, 19 were female. The mean age was 45 years (SD = 10.4), with a

Identify a research question appropriate for hermeneutic approach involving everyday experiences.

Develop a proposal, consent form, and interview questions to elicit an experiential narrative.

Recruit a purposive sample of informants whose experiences reflect the research question.

Gather data until meaning or understanding of the phenomenon is realized or saturation occurs.

Conduct and transcribe interviews that become data for analysis.

Analysis is conducted by the research team by continuous, ongoing examination of the whole and parts to ensure interpretations are grounded in the text.

- Stage one: Each team member reads each text as a whole, writing interpretive summaries.
- Stage two: Identify themes with excerpts from text as evidence.
- Stage three: Compare interpretations for similarities and differences at weekly meetings, returning to original texts for verification.
- Stage four: Reread all texts to link themes across texts.
- Stage five: Identify and describe patterns that show interrelationships across texts.
- Stage six: Validate findings by a group of participants.
- Stage seven: Write a final summary with supporting verbatim quotes.

Figure 1. Hermeneutic Process

Note. Based on information from Diekelmann et al., 1989.

range of 22–61 years. The nurses graduated from a variety of programs: diploma (2), associate (2), bachelor's (3), master's (12), and doctorate (1). Their work settings were cancer centers (6), clinics (3), community hospitals (4), veterans' hospitals (3), and Internet companies (4). The nurses spent an average of 14 hours (SD = 12.5) per week on the Internet, with a range of 2–40 hours. They reported using the Internet for a mean of 6 years (SD = 2.9), with a range of 1–10 years. Five related themes and two constitutive patterns emerged from the analysis (see Figure 2).

Theme One: Varying Degrees of Internet Integration in the Practice Environment

The study participants had a vast range of experience integrating the Internet into their practice. Although the oncology nurses in this study had a full range of educational preparation, work experience and computer competencies affected the extent of integration related to other factors. Patient information needs, environmental (computer availability) and institutional support, and computer access also influenced the variety of integration.

Patients approaching providers with Internet information acted as a stimulus for nurses to learn to deal with a different kind of nurse-patient interaction. One nurse said, "They have read on the Internet, so they were more aware and . . . would ask more questions than patients who didn't have access. They seemed to be more knowledgeable." Another said, "They are very educated patients. . . . It can be intimidating . . . but you have to be confident in what you do and why." The nurses needed to keep their knowledge current.

Some nurses perceived that their patients were below the digital divide, meaning without computer access. These patients were older, disabled, and economically challenged and perhaps were in a long-term facility. One nurse said, "Our patients are elderly . . . inner-city people. . . . [They] don't have money to buy a computer. . . . They're homebound, so they wouldn't go to a library." Another said, "Most of the people are severely disabled and cognitively impaired . . . or

close to 80 [years old], so they have not grown up with the computer. It is not part of their daily lives." The nurses did not expect these patients to be informed about the Internet, so they had little motivation for integrating the Internet into their nursing practice.

Other nurses said that their patients actively used the Internet. As one nurse said, "[Nurses] need the opportunity and the reason [to use the Internet]." The nurses who worked in outpatient settings were more apt to report patients approaching them with Internet information, perhaps because their more frequent appointments allowed for time to teach and support patients, whereas inpatient or urgent-care settings had a different focus. Nurses said, "The [inpatient] setting that I'm in is not conducive to that kind of talk [about Internet information]" or "They are urgent-care people that have an urgent problem."

Some nurses who worked in computer-related settings, designing and evaluating Web materials, dealt with computer-savvy patients. Nurses described computer-savvy patients as younger, "a bit more curious, and thought of [cancer] more as a long-term disease," as well as having economic and educational resources to access the Internet.

Another factor influencing the nurses' Internet experiences was Internet access at the work site. Although some had a computer available at all times, others "were not allowed to have Internet access on the floor." Nurses who had a computer readily at hand were able to look up patient questions immediately versus those who had no Internet available. Employers feared that employees would use the Internet for inappropriate purposes. One nurse described the lack of access because of the belief that there was "the risk of pornography and going on Web sites to shop." In this case, the institutions lacked trust in the nurses and, as one nurse said, "Nurses became apathetic [regarding learning new computer skills]." In this situation, the nurses' computer anxiety regarding lack of competency was an excuse not to learn. In some institutions, the nurses were encouraged to use the expert medical staff as the main resource for knowledge, thus regarding Internet information as unreliable and not specific enough for their patients' use. One nurse described

Related Themes

Varying integration in the practice environment

Changing schools of thought from conventional Western medicine to patient partnership

Developing Internet use for professional practice
- Seeking information
- Data collection
- Consultation

Redefining relationships
- Patient partnerships
- Knowledge consultant

New nursing skills
- Computer proficiency
- Evaluation of Internet information
- E-mail communications
- Content development

Constitutive Patterns

Integrating Internet into practice out of necessity

Reflecting historical changes in practice patterns influenced by technology

Figure 2. Nurses' Experiences Using the Internet for Cancer Care

what she would do with patient questions from the Internet: "I would refer them to the physician. Nurses play a hand in patient teaching, but the doctors are the library. I leave it to the doctor. It is not my responsibility to choose for them." Some institutions allowed nurses to give only "educational committee approved" materials to their patients, thus maintaining information power in the institution.

Theme Two: Changing Schools of Thought

The nurses' stories of Internet use in their nursing practice reflected differing views from a conventional school of thought, similar to commonly used Western medicine, to a newer school of thought where the patients were partners in care. Those who had patients who came with Internet information were more apt to be part of the newer school whereas those who dealt with older and more traditional patients were conventional. Patient need drove the change. Nurses' stories reflected a continuum of views from the conventional to the new school, with some having components of each.

The conventional school of thought reflected a belief in the tradition of providers as experts whose opinions were held in the highest regard. These nurses were insulted when patients challenged their expertise based on information gleaned from the Internet. One nurse related that, "You have to explain to the patients that this stuff is not accepted by the medical people." Another nurse described her concern when patients brought in conflicting information from the Internet. "[Internet information] does provide a lot of conflict of interest because we are trying to defend our rationale for why we may be prescribing a treatment modality." They had to refocus and reteach patients when the information was not individualized specifically to their diagnosis. A nurse said, "They bring in all kinds of things . . . so I have to refocus them." They were worried that patients were vulnerable to information overload when they used the Internet. One nurse described, "The information was too extensive. . . . It was almost too much, and it would scare you." A conventional school nurse told a story of a patient's persistence regarding a laboratory value.

> [What the patient] read on the Internet was right, and we were wrong. . . . She comes to us for care and then tells us what to do. . . . We had no idea where she got [the information], she just kept saying the Internet. She was so persistent. That was unnerving.

The new school of thought encompassed a newer patient-provider partnership. The patients were very active participants in decision making regarding treatment options, more so than as a "consumer," which the dictionary definition portrays as a more passive decision maker regarding which product to buy. The patients who arrived at the healthcare setting with information brought challenging questions to the nurses that encouraged them to keep current and recognize the importance of lifelong learning for patients and nurses. One nurse responded to information a patient brought about a drug-food interaction by inquiring if "it is a legitimate Web site, and is it something I really need to educate myself about?" Another nurse told of patients who find out about new drugs.

> When Gleevec® [Novartis, East Hanover, NJ] hit the streets, there was a great active market; they came in asking for it. . . . They really wanted it. It was not approved

for every cancer, but every cancer patient who heard of it was inquiring about it. I found them to be very motivated to learn about their care.

The nurses who were of the new school also saw the value of patients seeking support from online peer coaches. One nurse said, "I have many people who tell me stories of gaining hope and encouragement from going on the Internet." Although the nurses also recognized the importance of seeking and evaluating information for quality, a wide variety of opinions existed as to how to best evaluate the information. This will be discussed in another theme.

Theme Three: Developing Internet Use for Professional Practice

Nurses actively developed uses for the Internet in their practices, including using it as a resource for seeking information, data collection, and consultation. Nurses related how to access information and effectively search and filter out inappropriate information. One common example was searching for drug information often using "the manufacturer's drug site." One nurse summarized how nurses should use the Internet.

> They need to know what are the critical Web sites, how to refer patients to those sites, teach themselves and their patients how to navigate those sites for information, and help themselves and patients to evaluate good information from poor information.

Nurses also obtained updated information from continuing education (CE) programs available online. Although nurses often preferred live CE formats, they increasingly were using online programs, especially if they were free. The convenience of accessing the program in their home was an advantage over paying for travel.

One clinical trial nurse found the Internet to be extremely useful to manage data collection; however, she did relate an issue with using online forms: "These are patients we are dealing with, and answers are not always yes or no. I have a problem putting the information on these standard forms on the computer with no room for comments." The concern with the form was that it pigeonholes information and does not allow for capturing differences in narrative form.

Nurses also related using the Internet for consultation with fellow nurses from wide geographic areas or for the general public consulting nurses online. Nurses often indicated how they consulted fellow nurses about difficult cases or new protocols by using subscription e-mail lists or e-mail groups to discuss specific practice issues. One nurse said,

> We sent an e-mail to that group because we wanted to make sure the policies and procedures were current, and we really didn't like the way the urology nurses were handling the chemotherapy, and we figured there was a better way to do it, so we started scouting out to see what was out there.

Some nurses were consultants for Web sites and responded to e-mail questions for the general public. At times, the answers were general and simple, but other times, the answers required careful responses to avoid liability. "We are not medical consultants; we don't give advice." As one nurse said,

> We always answer generically and then always refer the patient back to their health provider because that covers us

from any liability issue, but there are times where I can tell really bad care is being delivered . . . such as poorly managed pain control . . . so I might really encourage people that they have the right to ask for a referral for a pain clinic or for a second opinion or [say] "Here is a place to go to look for questions you should be asking a doctor."

Theme Four: Redefining Relationships

The nurses' stories described the Internet as a catalyst for change and for redefining the relationship between provider and patient. This new relationship is a type of partnership whereby they both can work together to achieve a common goal or outcome. One nurse eloquently described this partnership in care.

It [the Internet] helps people be better informed, so they are a better partner in their care, and it helps them understand the language better. It helps them understand when they should or shouldn't be calling or what they should or shouldn't be doing . . . so I think a more informed patient and family member participate more in their care.

Some nurses believed that the Internet also provided patients with cancer with a sense of control while ensuring the best care is given by facilitating patients' and families' participation. Another nurse described this partnership as challenging in that patients return for care with information and questions that often enhance communication. She said, "The patients are interested in finding out what else is out there." Patients' questions included asking for information as well as inquiring about eligibility for certain treatment protocols. As one nurse related, "[patients' inquiries have] pushed the medical profession along a lot in becoming more responsive to consumer questions in general."

Some nurses described the impact of the Internet as expanding patients' knowledge level and facilitating communication with providers and other patients with similar conditions. With 24-hour, seven-day-a-week access, patients would e-mail oncology nurses with questions and concerns whenever they arose. The patients, via chat rooms, also would glean support from others in similar circumstances and with the same diagnoses. One nurse also mentioned that patients often used chat rooms to discuss and validate symptoms they experienced while on certain treatments. She cited one group that discussed leg cramps encountered during the night while taking tamoxifen, a side effect not mentioned in the literature. She also addressed the fact that these online support groups are "self-regulated" and correct misinformation fairly quickly.

The Internet has enhanced the role of the nurse from educator to knowledge consultant. Beyond explaining the rationale for treatment and educating patients about side effects of certain drugs and therapies, nurses must assist patients with evaluating information. As one nurse said, she must help "the patient to take a step back . . . [and] understand that you have all this information here. Some of it . . . most of it . . . all of it is true, but not in every case." The nurse then must explain individual differences, including why some individuals experience more symptoms than others and the fact that everyone reacts differently to treatments. Furthermore, the nurse as consultant must assist patients in the interpretation of a wide range of information, some conflicting, as well as explain treatment protocols in the actual treatment facility where the patient is receiving care. One nurse working in a bone marrow unit commented

that "informed patients were a challenge. You really don't know their interpretation of [Internet information], but you tell them what you have to offer and then reeducate them or refocus them toward the treatment goal."

As knowledge consultants, nurses also facilitated patients' information searches by individualizing search information, determining whether the information could be trusted, evaluating individuals' information needs and supports, and working with patients who were considering complementary and alternative medicine. Although the Internet provided knowledge and communication about disease processes, treatment options, and investigative protocols, several nurses in this study believed that an excessive amount of information was available that patients often did not know how to filter. One nurse said,

There is an overwhelming amount of material for patients when they get out there on the Web. If they are not savvy, they can get very easily overwhelmed and sometimes have a hard time understanding what's quality versus what's the kind of . . . not-so-quality type of thing.

Nurses needed to assist patients in personalizing Internet information—in other words, "What is going to happen to me?" Besides facilitating patients' searches, nurses needed to individualize information and correct misinformation. One nurse said that the old adage "if it looks good, then it must be good" regarding Web sites has to be challenged. Another nurse described the fact that "nobody goes in and reads the fine print and policies and procedures for protocols." Although some of the information was difficult to interpret, the nurses believed that the Internet was positive for patients in that it fostered a sense of control and forced healthcare providers, especially physicians, to be more responsive. One nurse, who was a technical writer and editor of a Web site, addressed this issue of information overload and interpretation and described a "patient version to make them very easy to digest." Some nurses believed that Web sites and information often can be misleading or subject to misinterpretation and that patients frequently "grab at straws" when their treatments have proved ineffective. Therefore, besides being knowledge brokers, nurses also must be investigators who determine the credibility of Internet sources.

The nurses told of how the Internet has provided an avenue for patients to seek information about unconventional, complementary treatments. This information encompasses herbs to boost the immune system in immunocompromised patients, nutrition supplements to strengthen patients, and roots that stimulate the appetite. One nurse pointed out that "while this information gives the patient a little control over this," patients also were concerned about drug and unconventional treatments interactions. Another nurse said, "I always ask the patient, 'What else are you doing to help your cancer?'" In the nurses' experiences, most patients are not told to stop these complementary treatments. They are told only to share the information with their healthcare providers so they can be observed for toxicities and drug interactions.

Theme Five: New Nursing Skills

Participants described new nursing skills required to practice in this Internet era. These included computer proficiency, evaluation of Internet information, e-mail communications, and content development.

Computer proficiency: Nurses will need to use computer skills to search for and filter information for themselves and patients. The nurses need to know "how to access the Web . . . [and] how to search and separate good and bad sites." So when patients inquire about the "most current methods of treatment," they usually already have an idea from the Internet sites, as one nurse related, "especially when there is something new on the market." To ensure patients' trust, nurses need to be proficient. Computer-savvy nurses were able to search large databases (data mine) and cull out the relevant information. One nurse used her computer skills to generate materials for patient education by searching "to find what you are looking for" and then checking "if there is anything new from the company that manufactured it." This nurse found a useful diary for patients to record their symptoms.

Evaluation of Internet information: Because of the wealth of information available on the Internet, nurses were concerned about the reliability of sources and Web sites. An additional concern was educating patients about this issue. Another nurse described patients as "daunted by the language" and unable to decipher quality information. One nurse in charge of a cancer information Web site was concerned about quality and remarked that all of the information provided to patients was backed up by a legitimate resource or reference. In addressing the legitimacy of the information, one nurse commented, "You want to take a look at who sponsors the site, how it is funded, where the information is coming from, is it accredited, do they follow the standards for Web excellence?" Although the aforementioned nurse spoke of accredited sites, to date, the effectiveness of these standards is suspect. In determining trust of Internet information, one nurse discussed validation of information, stating, "You ask people to not trust any one thing they find, and, in fact, the health-seeking behavior studies find that people go to a number of health-related sites seeking information." Seeking information from multiple sources prevents one agency or person from controlling all of the information about a particular diagnosis or treatment protocol.

E-mail communications: Using e-mail as a method of communicating with patients requires new skills and knowledge. One nurse gave each patient a business card with the professional e-mail address "because I am affiliated with the organization, so I have an address at work, so it kind of keeps you on a professional level." The patients then "will e-mail me. . . . This way, we have some contact and their problems and questions are addressed." One nurse e-mails laboratory results and handles prescription renewals by e-mail. "[Patients] will e-mail me . . . and I can take care of that right away." Timely feedback and the use of a professional site for communication with patients were appropriate for "keeping communication lines open" and to "let them know what to do with some of their symptoms and difficulties. If I get a lengthy e-mail with a lot of questions and concerns . . . and if you could see that the patient was wanting more than just treatment for his physical maladies . . . then talk to the patient . . . on the phone or bring him in."

Nurses also related that sometimes e-mail communication was inappropriate. "If it was something that was serious that couldn't be handled through the e-mail, I would have them come in or talk to them." Nurses respond to e-mail by being "brief and don't go into long explanations." Some nurses were concerned that the message may not always get through. "If I'm on vacation or off sick, then there is no way of anybody know-ing that information." None of the nurses interviewed identified particular organizational e-mail protocols or procedures.

Content development: Developing content for online sources, which includes evaluating functionality and design, was another skill that some of the nurses described. This was a new role for nurses requiring new knowledge. As one nurse stated, "Creating a functional Web site requires understanding of how people use it. . . . Nurses can involve themselves every step of the way." Nurses can design sites for the physically handicapped and sites that can serve as patient advocates. Internet information sites can be interactive and customized to the target audience. One nurse said, "We have a ways to go with making publications in plain language . . . [that is] easy to digest . . . [with] key points . . . [or] main things we want the people to take away from the documents." One nurse manager supervised non-nurse "information brokers" who operated the phones and answered e-mail queries for a cancer information service. The information brokers' function was to link callers with prewritten information from the National Cancer Institute. In this example, the nurse explained that the workers are "kind of like an extension, in a way, of the nurse." The nurse manager or knowledge consultant assisted with problem solving to answer nonstandard questions, "or it could be treatment-oriented questions." Knowledge of clinical and referral skills drawn directly from her nursing background were used by this nurse manager.

Constitutive Patterns

Constitutive patterns link related themes across texts. Two patterns were identified.

Integrating the Internet into practice out of necessity: The first pattern related how the nurses "out of necessity" integrated Internet use into their already demanding practice patterns. These changes were encouraged by the inevitability of working with patients who used information gleaned from their Internet searches. Nursing practice now must put more focus on the educational aspects of care with patients being more self-directed and less dependent. Computer-savvy patients encouraged the changing relationship as a new model of partnership. The patient partners actively participated and engaged in seeking treatment options to battle their cancer. Cancer was considered a long-term illness instead of a "death sentence" because they realized that "there are an awful lot of people getting chemotherapy and they live to tell about it." Nurse-patient relationships were redefined to include a level playing field where patients brought new information that encouraged both parties to continue to learn. Nurses were required to become computer competent to meet patient needs, learning how to search, filter, and evaluate the quality of the information. The environment could either help or hinder this development. One nurse summarized that

> [The patients] used to come in and say "tell me what to do and I'll do it." Now [that they use the Internet] it makes them feel that they have some control over their lives by understanding what is happening to them and saying "how about this" and "is this an option in my case."

Historical changes in practice patterns influenced by technology: The nurses' stories in this study reflected the differing levels and competencies of nursing practice, which have been common throughout the history of nursing in the United States. These nurses represent all educational levels (diploma,

associate, bachelor's, master's, and doctorate) and ages as well as different practice sites. Their nursing educational level and age did not influence the nurses' attitude toward embracing the technology of Internet in their practice. Similar to historical patterns, patient needs and institutional culture strongly influenced the attitude toward technology use. Institutional policies affected access to the Internet. The attitude toward a new patient partnership also was influenced by nurses' beliefs about who should have control of the information and patients' ability to understand the information. At times, the assumption that the patients were below the digital divide served as barrier to even considering the possibilities. Introductions of new technologies historically have influenced health care. The availability of the information on the Internet served to change the social practice of obtaining healthcare information from a provider, in that the patients are seeking care as partners versus dependent patients. The historical patriarchal attitude that only the doctor knows best was a barrier to embracing the reality of the new sources of information. If nurses do not embrace this opportunity to be challenged and learn, then patients will turn to others for their cancer care information needs.

Discussion and Implications

Through hermeneutic interpretation of oncology nurses' narratives of Internet use in practice, the meaning of new vision for oncology nursing practice emerged. As patients increasingly come to oncology nurses with information from the Internet, they are driven to redefine patient-provider relationships as a partnership and to develop new nursing roles.

Theme One: Varying Degrees of Internet Integration in the Practice Environment

Similar to the findings of Estabrooks et al. (2003), the environments in which oncology nurses work sometimes hinder integration of the Internet into nursing practice through institutional policies that restrict access. This reflects a culture of distrust and devaluation of the patient education aspects of oncology nursing. The erosion of oncology nursing practice by encouraging nurses to ask physicians rather than use accurate sources, such as those found on the Internet, as well as the mandated use of institution-approved patient educational materials rather than individualizing materials based on patient needs, is especially troubling. Regardless, patients are seeking health information on the Internet in increasing numbers (Pew Project, 2003) and are becoming more active in their care, especially in oncology outpatient settings. By seeking information on the Internet, they are seeking to be partners in their care, which pressures nurses and the practice environment to respond out of necessity.

Theme Two: Changing Schools of Thought

Changing to a patient partnership focus from the more traditional paternalistic approach to practice shifts the balance of power in provider-patient relationships (Dickerson & Brennan, 2002). In this new school of thought, expectations change to a model where patients are perceived as capable of and partially responsible for decision making and self-care management. The issue, then, is how to help oncology nurses move from the conventional school of thought in which they appear to be threatened by well-informed, questioning patients to the new school of thought focused on patient-provider partnerships. Based on this study's findings, patients' computer competency,

nurses' self-confidence and current knowledge, and the availability of Internet access in the work environment contribute to positioning along this continuum of threat to partnership.

Theme Three: Developing Internet Use for Professional Practice

Oncology nurses who integrate Internet technology into practice foster lifelong learning as they remain current and open to discussion of the latest treatment and symptom management protocols. They must be able to easily access information that patients bring to discuss validity and applicability. The Internet also provides a globalization for nurses when they network to solve problems, consult on difficult cases, and discuss new protocols. E-mail communications with colleagues and patients are beginning to develop as an alternative and convenient way to communicate (Leiderman & Morefield, 2003). Nurses are developing practice patterns to manage this efficiently and effectively. The Internet also provides wonderful potential for cancer-related public education and health promotion interventions to which oncology nurses can contribute as content experts.

Theme Four: Redefining Relationships

This change in nursing practice reflects a collaborative relationship between patients and nurses. The role of the oncology nurse is enhanced to include helping patients to individualize Internet information, determine the trustworthiness of the information, and provide support for meeting other patient information needs. Because of the digital divide (i.e., lack of Internet access), some patients may not have the technologic tools to obtain information from the Internet on their own. Nurses must consider whether these patients may wish to obtain Internet information, and if so, provide guidance to assist them. Future research on outcomes of care using these interventions is warranted.

Theme Five: New Nursing Skills

Based on these findings, four new skills are needed by nurses for Internet technology-enriched practice. First, computer proficiency provides the foundation that enables nurses to search for and filter information on the Internet. Integration of technology into basic nursing programs also is essential to develop this expertise. Second, skills in information consulting are needed to evaluate and individualize information for patients. Depending on Web-accrediting bodies for determining accuracy of information is impractical. Researchers have studied accrediting bodies and found that the task would be too daunting, partly because of potential daily changes in information (Jadad & Gagliardi, 1998). Time would be better spent encouraging patients to ask questions and teaching them to cross-validate sources to assist in determining accuracy of information. Third, e-mail skills are needed to keep lines of communication open. E-mail can be used for tasks such as answering patient questions as well as sending laboratory results and prescription renewals. Last, skills are needed in online content development and delivery.

New nursing roles in informatics, online content creation, and evaluation of online information are evolving. With this evolution, several issues emerge, including nurses' content expertise, information availability, and medical practice disclaimers. In working with others in online content development, nurses should have self-confidence in their content expertise and not assume that others know what is best. When

formatting information in bulleted form, the full text should be available for information seekers to read if they so want. Use of legal disclaimers and privacy statements certainly protect the Web site developers from liability; however, when answering e-mail questions, the definition of medical advice is open for discussion. Concern for patients' rights is essential. Another issue is use of non-nurse extenders as information brokers to answer e-mails and direct patients to information. Supervision by nurses with clinical expertise is important in individualizing patients' information needs and providing accurate information. Clarification of issues such as drug interactions, applicability of treatments to certain cancers, and symptom management recommendations can be done through collaborative discussions with providers. This issue is especially important now that complementary and alternative medicine use is prevalent.

Limitations

The primary limitation of this study is that it is unknown what others who did not participate would say. However, use of the Heideggerian hermeneutical approach provided a rich understanding of the everyday issues that these nurses experienced regarding use of the Internet in their practice.

Summary

Out of necessity, oncology nursing practice is evolving to include Internet technology. Historically, nurses have used a variety of tools such as monitors, implantable ports, patient-controlled analgesia pumps, and other technologies to provide care for their patients (Sandelowski, 2000). "Technology contributed to (re)negotiating the sphere of influence of the nurse and so the social relations . . . between nurses, physicians and patients" (Sandelowski, p. 10) have changed to create new opportunities for nursing practice. In the case of Internet technology, the oncology nurses' collaborative role is expanded. Although this movement is patient driven, nurses can foster it by improving their computer and Internet skills, integrating development of these skills into nursing curricula, promoting changes in institutional culture, and evaluating nursing interventions based on Internet technology through outcomes research.

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