TELENURSING

and Home Healthcare

The Many Facets of Technology

Telenursing was instituted as an effective mode for providing care to patients geographically distant from healthcare providers. Using telecommunications and information technology, nursing care is provided remotely to individuals. Nurses recognize the value of telecare and telehomecare as essential components of telenursing that give patients easy access to high-quality care and eliminate costs and difficulties associated with travel to healthcare facilities. Patient satisfaction with telenursing is related to prompt quality care from professional nurses. Telenursing continues to grow as a valuable method for providing nursing care, especially in home healthcare.

Inception of Telenursing

The delivery of healthcare in the United States has been influenced by telemedicine and telenursing (Norris, 2002). These healthcare delivery methods have enhanced the efficiency of providing healthcare to distant healthcare consumers. Telemedicine and telenursing promote the use of teleconsultations for relaying information between between 2 or more healthcare providers without patient involvement or between 1 or more healthcare providers and a patient.

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Teleconsultations are used to send and receive information between physicians and patients via a videoconferencing link (Raghupathi, 2003). This is an efficient method for keeping physicians informed of any new problems or changes in their patients' conditions. Patients can present these problems to their physicians for viewing from remote locations. Videoconferencing allows physicians to diagnose and prescribe treatments immediately, alleviating anxieties, preventing complications, and restoring health sooner.

Since the inception of telemedicine, nurses have recognized its distinct value for delivering remote care efficiently and effectively to patients. They have expanded the concept of telemedicine to include nursing care for patients at a distance. The term "telenursing" has been coined to include the delivery of nursing care to patients in their homes (Norris, 2002).

Clinical Applications of Telenursing

Telenursing has been introduced into nursing practice as a means of providing electronic care readily to patients at a distance using telecommunications. Critics have questioned whether electronic care constitutes nursing care. The American Nurses Association (ANA) first endorsed telenursing in 1999 as an official form of nursing practice, and has established that electronic nursing care has value to many patients. Telenursing also is referenced as telehealth, and these terms are used interchangeably.

According to the ANA (1999), telenursing meets the standards of nursing practice because nurses using telenursing follow the traditional nursing process to formulate care plans and provide care to patients. These nurses still use their nursing knowledge and skills to assess, plan, initiate, and evaluate nursing interventions for their distant patients. Although they have no physical contact with their patients, telehealth nurses use their nursing knowledge to identify clues from patients' tone of voice and facial expressions to assess and make nursing diagnoses.

Telenursing allows nurses to care for many patients at a distance. The value of telenursing to patients is that skilled nurses are available to them for questions or concerns as they arise, enabling them to receive effective nursing care readily. Telenursing can reach many patients who otherwise may not be able to receive adequate healthcare. It can be especially helpful for elderly patients with mobility problems, patients with debilitating diseases, and persons living in rural areas where little or no healthcare is available. Telenursing promotes efficient accessibility to nurses with no geographic constraints. It is most popular in its current uses for telecare nursing and telehomecare nursing.

Telenursing includes any form of nursing care delivered at a distance wholly or partly through electronic means (Peck, 2005). Telecare nursing is a subset of telenursing (Burke, 2007). Telecare nurses collect and interpret information on the phone from callers with various problems. These callers may be patients, their family members, or caregivers seeking advice. Telecare nurses refer these callers to appropriate healthcare resources within a prescribed time.

Using the nursing process, telecare nurses assess callers' problems with regard to urgency, plan and implement therapeutic care with appropriate recommendations or referrals, and evaluate their nursing actions by callers' responses to the telephone advice. Callers do not have to accept the advice given to them by telecare nurses. The nurses are not held accountable for their disregarded recommendations, but they are held liable should they fail to warn callers about the possible consequences of noncompliance (Tammelleo, 2006). To protect against liability, telecare nurses should document their dialogues with callers, as well as the warning they issued to the callers about rejecting recommendations made to them.

Teletriaging is a process of determining persons in need of healthcare and assisting them in receiving the type of care that is most beneficial (Tammelleo, 2006). Telecare nurses teletriage to assess whether the caller's problem is urgent and in need of immediate medical attention or whether the problem is not an emergency but does require some medical or nursing intervention. Persons in need of medical or nursing attention are referred to appropriate sources. Telecare nurses also have the responsibility to assess whether certain problems can be managed in the home alone without medical or nursing intervention.

Telecare nurses decide, direct, and coordinate care rather than provide nursing care directly. These nurses must have clinical knowledge, an understanding of the healthcare delivery system, and access to health information to provide high-

quality telephone nursing services to callers with various concerns and problems (Coughlin, Pope, & Leedle, 2006).

It is most important that telecare nurses have excellent communications skills. They must be able to express themselves accurately and clearly to callers. They also must have active listening skills to interpret the true meanings of callers' requests and be able to respond therapeutically. Telecare nurses also must be skilled at posing questions that elicit an abundance of pertinent information in a concise way. Callers in a high state of anxiety are especially challenging to telecare nurses. These callers may be giving vague or conflicting information, and telecare nurses must be able to interpret accurately the needs of these callers.

Telecare nurses should use an approachable voice that conveys interest and understanding with a nonjudgmental attitude. This helps gain the trust of callers, which is necessary for their compliance with the nursing recommendations offered to them. Following the suggestions made by telecare nurses is important for obtaining the best possible healthcare.

The demand for telecare nursing continues to grow as the current healthcare delivery system becomes more complex with regulations and financial burdens to consumers. Many Americans have expressed their dissatisfaction with the current system, and have voiced their concerns about access to care since 1997, as reported by the National Coalition of Healthcare (1997). Telecare nursing may help to alleviate the problems associated with the current healthcare system because it promotes access to care and decreases costs to healthcare consumers.

Telehomecare is another subset of telenursing. Telehomecare nurses deliver healthcare services electronically to patients in their homes, with patients taking an active part in their care (Rosenthal, 2006). For example, these nurses can use an electronic stethoscope to listen to the heart and lungs of patients with congestive heart failure. They also can monitor blood glucose and inspect an insulin syringe before self-administration by the patient to ensure that the correct insulin dosage will be administered. Electronic data on pulse oximetry and respiratory flow can be transmitted to nurses so they can monitor patients with chronic obstructive pulmonary disease (Hemmila, 2006).

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Virtual visits were first made possible by use of a 2-way visual and audio system designed by Finklestein, Speedie, Lundgren, and Ideker (2000). A setup box in the patient's home is connected to the television and a telephone line. This videoconferencing technique uses a plain old telephone service. A small video camera/microphone is placed on top of the box.

A virtual visit begins when the nurse calls the patient at home. The patient is seated in front of the television with it set to a pretuned channel. This allows the patient and nurse to see, hear, and communicate with each other in real time. The patient can point the camera to a particular spot when trying to explain to the nurse about a certain problem, such as a sore on the arm. The nurse can get a close-up view and obtain still pictures by using the snapshot/freeze-frame function.

The telehomecare nurse uses a central station at the home care agency. The station is equipped with a videoconferencing unit connected to a regular telephone line. A VCR also is available to capture the nurse-patient interaction. The patient's record is stored with the agency in a home healthcare database (Finklestein et al., 2000). The nurse has access to the patient's electronic file for reviewing, documenting, and updating information.

Patients are supplied with the necessary home monitoring equipment. This usually includes automatic blood pressure monitors and a pulse oximeter to measure oxygen saturation and pulse rates. Other devices are provided according to the patients' specific medical conditions,

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such as an electronic spirometer connected to a palm-top computer for the measurement of lung function experienced by patients with respiratory problems (Sugrue & Riggs, 2005).

Nurses need to teach the patients and their family members how to use the equipment before initiating home monitoring sessions. This helps to ensure proper use of the equipment necessary for obtaining accurate test results, such as blood pressure readings.

Telehomecare provides close monitoring of patients in their homes. Home health nurses make approximately 1.5 million visits each year for this purpose (Coiera, 2003). Nurses have reported that 40% of in-home visits do not require hands-on care and could be replaced by telehomecare (Fetzer, 2004). They suggest remote monitoring for many of these visits to improve efficiency in the delivery of healthcare. Nurses would spend less time traveling to patients' homes and have more time to communicate with patients using video-audio communication links. This would promote close monitoring of patients for progress and implementation, as well as evaluation of nursing interventions.

One study showed that a telenurse effectively managed the care of patients with chronic wounds. Results indicated improved healing rates and times and fewer home visits made to these patients (Moore, Britton, & Chetney, 2005). Telehomecare nursing enhances nurses' efficacy because more frequent telehomecare visits can be made than face-to-face visits. The average home health visit lasts approximately 45 minutes, whereas a telehomecare visit is typically 18 minutes (Cariello, 2003). Frequent monitoring enables nurses to detect changes in condition readily and provide prompt effective nursing care.

Telehomecare is especially beneficial to elderly patients. It permits elderly persons to receive care at home and to avoid discomforts and inconveniences caused by traveling distances to healthcare centers. A study showed that more than half of elderly participants favored telehomecare visits using interactive videoconferencing to monitor their care, such as checking blood pressure readings and blood sugar measurements. (Jones & Brennan, 2002). The need for telehomecare is expected to rise because of a growing elderly population that likely will have healthcare needs requiring frequent monitoring (Coughlin et al., 2006).

The first report of potential savings from telehome care shown by Mahew, Whitten, and Allen (2001), indicated an enormous reduction in healthcare costs. The average cost of $90 for an on-site home visit by a registered nurse, most of it for the nurse's traveling costs, sharply contrasts with the average cost of $20 for a telehome nursing visit. This enormous savings is a compelling reason to use telehome care.

Pressure ulcers may be a particular concern for elderly persons with mobility problems. Close monitoring of pressure sores is necessary to prevent complications such as infections. Telehomecare is a very useful method for assessing these sores frequently. A study showed that pressure ulcers were assessed using a digital camera. Images of the ulcers were forwarded to a laptop computer. Nurses used this method to monitor the wound care management of these ulcers and to implement immediately necessary nursing interventions that helped to improve the healing process (Halstead, Dang, Elrod, Convit, Rosen, & Woods, 2003). The study showed that a different method using newer technology promoted efficient delivery of nursing care for effective wound healing. Advances in communication technology will help telehomecare continue to grow as an efficient and effective means for providing care to patients in their homes.

Effectiveness of Telenursing and Patient Satisfaction

An initial survey of nurses' concerns was conducted with the introduction of telenursing, and responses showed that the nurses posed certain questions for some practicing nurses (Ozbolt,

1996). They were concerned about the possible dehumanizing effects of distant care for patients and the quality of this nursing care. They felt that the nurse-patient relationship was jeopardized with the use of telenursing, and that an unsatisfactory nurse-patient relationship had a negative effect on the quality of nursing care provided to patients.

A later study was conducted to investigate this concern (Hutchinson & Williamson, 1999). The results of this study showed that telenursing using teleconferences provided patients with quick access to information. This was found to enhance patients' involvement in their care, which also strengthened the nurse-patient relationship. It was determined that this outcome promoted high-quality nursing care, resulting in patient satisfaction. These findings supported the use of telenursing for providing care to patients.

Additional subsequent studies investigating telenursing showed overall satisfaction with these findings. Patients reported satisfaction with the nursing care they received via teleconferencing and stated that a benefit of telenursing was easier access to care (Greenberg, 2000).

Another study showed patient satisfaction with telenursing, specifically with the receiving of information from nurses on the telephone (Hagan, Morin, & Lepine, 2000). Patients reported high satisfaction with the quality of nursing services received in this manner. They stated that the nurses understood their problems well and that they gave clear information and advice easy to understand. Nearly 85% of the callers felt nurses' recommendations were effective in solving their problems. Another outcome of this study showed that patients were especially satisfied with telenursing because it helped solve their problems readily, avoiding traveling time and costs for receiving answers to their immediate health concerns. The main argument in favor of telenursing is that it provides patients easy access to care. There is a general consensus among patients that they have been satisfied with telenursing, although there may be some anxiety about using technology in healthcare (McGarry & Narin, 2005).

Findings from 1 study explored nurses' views about the use of videoconferences in lieu of home visits for providing care to patients. These nurses reported a limitation with this type of telenursing (Wakefield, Holman, Ray, Morse, & Kienzle, 2004). The nurses pointed out that it is important to assess the patients' living conditions for designing a care plan, and that a video camera does not allow them to inspect patients' home for potential impediments to recovery of health. The nurses also emphasized that videoconferencing does not allow them to touch their patients. They explained that physical contact with their patients is an important part of nursing care. Nurses use therapeutic touch as a means of showing that they care about the well-being of their patients. Overall, nurses accepted telenursing as an additional means for providing care, but not as a substitute for conventional nursing care.

Patient satisfaction with telehomecare is especially evident among older persons (Bratton & Short, 2001; Chang, Mayo, & Omery, 2002). However, an important study points out patients' preference for a combination of telehomecare and face-to-face visits (Jenkins & McSweeny, 2001).

Legal and Ethical Issues in Telenursing

Nurses providing telecare or telehomecare services need to be aware of potential litigation and ethical problems. Nurses engaged in telecare provide telephonic care across state borders. This gives rise to regulatory and licensure concerns. Nurses need to understand that the law controlling how telecare is provided is the law where the patient is located. To avoid potential legal problems, it is important that nurses obtain the Interstate Compact licensure and be aware of its terms.

Additionally, telenursing is beginning to use chat rooms for conversing with patients (Armstrong & Frueh, 2003). This creates a new potential risk for malpractice liability. Nurses who identify themselves as nurses and participate in online discussions with patients are cautioned with regard to healthcare advice. It is best for nurses to avoid advising patients in Internet chat rooms to lessen the chances of experiencing malpractice lawsuits.

Telecare nurses are likely to use the telephone to provide information to patients. Telephonic communication highlights the ethical concern about patient autonomy and privacy (Muller, 2004). The ethical principle of autonomy upholds

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the patient's rights to make informed decisions. Nurses must assess whether patients receiving telephonic advice are mentally competent. Telecare nurses are held to ensuring within the standards of their profession that the patient with whom they are speaking is competent to make decisions. If the nurse has any doubts of the patient's mental status, he or she must document these findings and ethically must refrain from putting the patient in any situation requiring decision making.

Privacy is another ethical concern with telephonic communication (Muller, 2004). Nurses must first ensure that the person to whom they are giving information or advice is indeed the patient. Telecare nurses also must ensure that patient conversations are not heard by others. If the patient is not alone or using a speakerphone, then the nurse must inform the patient that privacy may not be maintained. It is the nurse's ethical duty to ensure the patient's rights to privacy at all times.

Privacy and confidentiality are ethical concerns in telenursing (Schlachta-Fairchild, 2002). Professional standards of nursing practice and ethics mandate the protection of patients' privacy. This refers to the right of an individual to control the use and dissemination of personal private information regarding health issues. Confidentiality protects patients' privacy by mandating specific controls for accessing or disclosing medical information. Whether nurses use telephonic or electronic communication, they must always safeguard patients' autonomy and privacy in telenursing.

Conclusion

Telenursing has become well recognized as a means for administering quality care to patients at a distance. It may be speculated that telenursing will operate primarily over the Internet. It also is imaginable that wearable computers may play an important role in telenursing in the future. The goals of a wearable computer are mobility and augmentation of reality. An example involves nurses wearing an intelligent wristwatch that constantly monitors the vital signs of their patients and alarms them of any concerns over portable stereo headphones. There will be no more manual uploading or typing of measurements from the patients' monitoring devices. It may be expected that telehomecare will continue to gain popularity and likely become standard procedure in future nursing practice. ☗

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