

The Information Behavior of Nursing Professionals: The Impact of Education, Training, and Technology

Introduction

An examination of nursing professionals' information behavior reveals nurses work in an information inundated environment. Nurses, in particular, are of interest to this researcher because their information use in the decision making process directly effects the well-being of patients. Nurses are often in the distinct position of seeking information and distributing information concurrently. The needs are specific to the work environment, revealing an integration of the two information roles. Nursing professionals' use of information sources illustrates the significance of the work setting. This study explores how environment, education, and training impact four nurses' use of information while practicing in different specialties.

The implications of this limited study reveal information professionals can play a significant role in designing programs and systems to encourage the accessibility of resources for nurses without interrupting the flow of care. Awareness of these new developments can be achieved by utilizing the existing resources of continuing education and in-services. Including technology training with professional practice updates will enable nurses to learn how to efficiently access information resources

Literature Review

The Model of Task and Rhythm

In the examination of information seeking literature, researchers explored the traditional models presented the behavior of scientists and scholars. It became clear these

traditional models did not represent distinct groups of information seekers. In response to this, Leckie, Pettigrew, and Sylvain (1996) proposed a new model that reflects the information seeking needs of professionals. Engineers, health care professionals including nurses, physicians, and dentists, and lawyers were studied as representatives of the professional population. In this model, work roles define the *tasks*; and information needs result directly from the tasks. An individual's ability to resolve the need is dependent on his/her awareness of the information, the sources of information available, and the constraints. Examples of constraints are time, accessibility, and the quality of information available. In the health care profession, the primary task is the care of the patient.

Reddy and Dourish (2002) further confirm the working environment establishes a temporary pattern, or "rhythm," that serves as the framework to understand the integration of health professional's information seeking needs. The established routine of patient care directly affects the information exchange between patients and staff. The "rhythm" of the medical workplace expands the idea of the individual patient as a task within the pattern of the group. The patient is then regarded as an individual trajectory in the larger rhythm of the group.

With the patient's needs defining the *task* and establishing the rhythm within the medical work environment, it was found that nurses primarily seek information relevant to the task (Blythe and Royle, 1993). Nurses rely heavily on each other as a source of information. In the process of seeking information, nurses will seek answers from fellow nurses first (Blythe and Royle, 1993; Cogdill, 2003; Lathey, 2001; McKnight et. al., 2002). There are several explanations for this: the nurse's inability to leave a patient or

situation, uncertainty regarding the location of the information, trust in the coworker's knowledge, and time limitations. Secondary information resources include manuals, physicians and pharmacists, journal articles (Codgill, 2003). Nurses also rely heavily on a nurse educator to be an information distribution point, providing them with training opportunities and information, especially in the area of drug therapy (Wozar and Worona, 2003).

Use of Technology

Using technology to facilitate information seeking is not uniformly embraced in the nursing professional community. In the context of this study, technology is defined as online resources (charting, scheduling, web sites) and hand-held wireless devices (PDAs). There are many reasons why technology is not adopted by health care professionals. Concern with the security of confident patient information, reliability, and lack of training are all factors. The information accessed by technology needs to be fast, current, and reliable because time is limited (McKnight, 2004). Chen, et. al (2004) found physicians' uses of PDA's equipped with Palm CIS software to be useful because it provided real-time access to patient data; although the data was not always relevant. Wireless devices and on-site computer stations have the potential to address the problem of inadequate information access in the clinical environment.

Technology has the ability to provide reliable relevant information to nurses without requiring them to abandon their task. Technology will also allow health care professionals to communicate with each other efficiently with applications like email. Tange (1994) concluded most information exchanges between nurses and physicians

were verbal. In the ten years since this study was conducted, this researcher proposes email is now used in addition to the verbal exchange.

Methods, Instruments, and Procedures

Four nurses were interviewed separately in an ethnographic-style dialogue in order to gain a better understanding of how nursing professionals satisfied their information needs. The objective was to learn how nurses recognize their information needs and the factors that impact the resolution of those needs. The interview questions were based around four central themes:

- What are the information needs for nursing professionals?
- Does the level of education impact a nurse's ability to recognize information needs?
- How does technology assist nurses in resolving their information needs?
- How are opportunities presented to nurses to provide additional education as sources of information?

Two nurses were interviewed in their respective homes. The third nurse was interviewed in her cubicle office at the University of Michigan Hospital system. Finally, the last nurse was interviewed in the home of the researcher. All interviews were recorded with the permission of the interviewee and transcribed by the interviewer onto a tape. Each interview lasted over one hour. The QSR Nvivo software was used to analyze the transcripts.¹ The following nodes were used to annotate the transcripts in order to answer the research questions: education and future education, rhythm, information resource, special training, and technology.

¹ The QSR Nivo 2.0 software used was the demonstration version. The difference between the full version and the demonstration version is the saving capability. The demonstration version did not provide a save function. The analyzed transcripts were printed immediately to save their node annotations.

Results

Education

The nurses each represented different areas of practice. The first nurse interviewed works at the University of Michigan in the Oncology Center. She has worked in this area for five years. Prior to this, she worked at the University of Michigan Emergency Room and the University of Colorado Oncology Department. The second nurse is currently employed at the Edward W. Sparrow Health System Emergency Department in Lansing, Michigan. The third nurse is a nurse supervisor at the University of Michigan Interventional Radiology Department. And finally, the fourth nurse works in a rural private practice of a general family physician. With the exception of the Emergency room nurse who has a Bachelor's of Nursing and is a registered nurse, the other nurses only hold an associate's degree. This information was unexpected. The researcher anticipated the nurse supervisor would be required to hold a master's degree in order to maintain a management position.

Although each nurse stated their current education did not restrict their abilities to advance in terms of promotions and salary, all four expressed interest in pursuing further education. For the most part, they want to extend their training to the next level. The oncology nurse is interested in pursuing her bachelor's of nursing and perhaps a master's degree specializing in grief and bereavement. The general practice nurse is currently being encouraged by her physician to pursue a nurse practitioner's license. Glass's (1999) research indicates that when nurses are encouraged by a supervisor, and there is a

program available, they will be more likely to pursue their education. The nurse supervisor is enrolled in a management course offered on site at the hospital and is currently enrolled in the bachelor's degree program offered by the University of Michigan. The only nurse with a bachelor's degree is actively researching a master's degree program at the time of this research.

Similar to Codgill's (2003) findings that nurse practitioner's with a master's degree is more likely to experience information needs than a nurse practitioner without a master's degree, the research from this study reveals the nurse with the highest level of education experienced information needs more frequently. Contrary to the research of previous studies, this nurse did not use her colleagues as an information resource.

Further exploration of this topic reveals she is one of the more senior nurses in the Sparrow Emergency department with five years experience at that location and does not feel confident in the knowledge of nurses with less experience. If she has any questions regarding a medication she will immediately access the medical references as soon as she is able or contact the pharmacy directly. In addition, this particular nurse credits the specific training she received from professors in her undergraduate program and the faculty/staff from the Scott N. White Hospital in Texas, Temple with nurturing and molding her nursing behavior. This finding may suggest information seeking behavior is integrated into the curriculum of four year nursing programs and is also emphasized in the training programs of institutions.

All of the nurses interviewed participate in continuing education. In order to maintain their nursing licenses they are required to maintain their certification. The three nurses associated with hospitals all attend in-services. These in-services are arranged by

their department nurse educator. The oncology nurse acknowledged that nurses could request in-services, a direct method of resolving an information need not only for herself, but for her colleagues as well. The most common needs addressed by in-services are drug therapy and new equipment.

The researcher anticipated the general practice nurse would have difficulty keeping current with education. Although she does not have a nurse educator as an information resource, the physician she works with actively encourages her continued education by providing relevant journal articles.

Rhythms

Prior to her tenure in a private practice office, the last nurse interviewed worked in a nursing home. The majority of the patient care in a nursing home facility falls onto the nursing staff. Physicians are only required to visit the facility once a month. Nurses are required to dispense medicine at the same time everyday and use this opportunity to assess each patient's status.

At five o'clock med pass, you have one hour before and one hour after to get your med pass done. You only have two hours to do it and forty-some patients....I always kept a little piece of notebook paper. I would write down my room numbers and anything out of the ordinary I would write it down. If there were symptoms going on and if it wasn't life threatening, I would pass it on to the next nurse and say, "keep an eye on this, this is what was going on today."

This routine or pattern of behavior illustrates how the *task*, delivery of medicine to patients, is embedded in the rhythm of the facility. The dispersion of medicine is critically linked to information gathering regarding the status of patients.

When all four nurses were asked how they start their shift, all reported they check the schedule for that day. In three cases they check the computer system first. The ER nurse stated that she is rarely in this schedule and has to locate her shift nurse to obtain her assignment. With all of the nurses the task is patient centered and most information needs surface in response to the patient's need. The scheduling of patients, or in the case of the emergency room the arrival or assignment of the patient, establishes the rhythm of each nurse's information seeking behavior.

Information Resources

With the exception of the Emergency department nurse and the issue of junior staff being less knowledgeable, all of the nurses used fellow nurses as their primary information source. They will refer to the procedure manuals and drug manuals at the nursing station, physicians, pharmacists, their nurse educator, and pharmaceutical representatives as secondary resources. They also consulted journals and attend conferences. The Emergency department nurse is also a member of the Emergency Nurses Association and the TNCC (the Trauma Nurse Core Course). They all expressed confidence in their ability to recognize when they needed more information and to successfully access the best resource to fulfill the need.

The Emergency department nurse's consistent information seeking behavior directly influenced the information seeking behavior of the rest of the emergency nursing staff. Because of her training, she insisted on using drug reference books to confirm compatibilities. Before her arrival at Sparrow, they did not use keep reference manuals for the nurses. In order to satisfy her need, this nurse took the initiative and brought her

own resources from home. In response to this particular behavior, the nurse educator immediately wanted to learn more about these reference manuals and subsequently acquired similar materials for the department nurses to share. This incident illustrates the importance of nursing having access to the resource in the location of their task.

Information Provider

Prior to the interviews, this researcher was interested in exploring the nurses' information seeking behavior. During the interviews, it became clear that an integral role nurses play is that of the information provider. In an ethnographic study, Pettigrew (2000) established nursing professionals provide care *and information* to elderly patients. The nurses interviewed for this paper distribute information to patients on a regular basis. They also acted as the information conduit between the patient and the physician.

In the case of the nurse supervisor, she *is* the information resource for patients, physicians, and staff. For example, the University of Michigan Hospital system is building a new cardiovascular hospital. The nurse supervisor was the only nurse from her division asked to attend a meeting regarding the layout for the new unit.

They're going to have a couple of new rooms, interventional radiology rooms over there. They asked me to come to a meeting to see a presentation of what they are doing. They asked me a million questions about what we do and how we do it. They're trying to figure out staffing and what they need in the rooms and support systems....One of the ladies contacted me and wanted to come on a tour of the area to go through our system....she was like, "Oh, my gosh, I don't know how you do it."

In this case, the nurse supervisor's ability to provide information will directly impact the design of the new unit.

Both the Oncology nurse and Emergency department nurse are preceptors. Preceptors are senior nurse trainers. New nurses follow the preceptors, shadowing them during their shift. Preceptors are responsible for introducing new nurses to the rhythm of their respective departments. An integral component of the rhythm of the work environment is information seeking behavior, from medical procedures to how to utilize resources.

Technology

Technology is available to all of the nurses interviewed as an information resource. Based on the research by Griffin (1994), it was found that staff members in Great Britain were unaware of the resources available, including computer applications. Even though this study is eleven years old, the researcher anticipated the study findings to be relevant in rural locations. An interesting revelation is that the general practice nurse in a rural private practice uses a wireless PDA daily. With the PDA, she can access patient records, drug information, and is able to fax prescriptions directly to the pharmacy from the patient's room. In addition, the practice is a member of the Promedica Health System. This nurse is able to use the Promedica intranet to access patient records, including lab results.

Both the Oncology nurse and the nurse supervisor at the University of Michigan Health System use CareWeb, the intranet system. Careweb consolidates several resources for University of Michigan health care professionals into one online location. Patient records, procedure and protocol updates, journal articles, employee directories, and other resources can all be accessed from this central site. All of the nurses use email

as a tool to receive and share information. The Oncology department is encouraged to use a group email address to share information regarding new drugs they encounter.

Conclusion

This study examined the information behavior of four nurses practicing in different environments. It confirmed the rhythm of the work environment and the task of patient care determines nurses' information needs. It verified there is a correlation between a nurse's education and the probability the need will be acted on. While the network between nurses serves as the primary information resource, several resources were also consulted including technology tools.

Information professionals need to work with nursing educational programs to integrate information seeking skills into the curriculum. Although, nurses are responsive to addressing colleague's needs formal education provides an opportunity to instill information seeking behavior skills. In addition, technology is a tool nursing professionals will use if it is reliable and convenient. Information professionals need to work closely with nursing professionals to provide technology training. The work setting of nurses is an information rich environment and information professionals can work to facilitate successful information seeking behavior.

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