Knowledge Sharing in a Thai Intensive Care Unit Nursing Team: A Case Study of a Private Hospital in Eastern Thailand

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Abstract: The purpose of this study is to explore the practices of knowledge sharing in a Thai private hospital intensive care unit (ICU) nursing team. This study selected a constructing grounded theory strategy. Purposive sampling and theoretical sampling including grounded theory interviewing and an in-depth interview are used to collect data from the 29 participants who consisted of senior and novice nurses in the same Thai ICU until the theoretical categories were saturated. The findings were initially open codes and these were developed as concepts and categories. A total of seven main categories were identified as: (1) A Nurse's Necessary Knowledge; (2) Knowledge Resources; (3) Method of Knowledge Transformation; (4) Process of Knowledge Transformation; (5) Facilitating Knowledge Sharing in the ICU; (6) Obstacles to Knowledge Sharing; and (7) Feelings towards Knowledge Sharing. Moreover, this study provided a more detailed picture of the knowledge that a Thai ICU nursing team shared with one another. One unexpected finding was that some nurses did not disclose the information as much as they should have done, although it was the part of the hospital's plan to teach the nurses certain things when they joined a department. Administrators should create a culture of caring and sharing in order to contribute to the voluntary sharing of knowledge and the willingness of nurses to work in a hospital ICU.

Keywords: Knowledge Sharing, Thai Intensive Care Unit Nursing Team, Grounded Theory

Introduction

The knowledge gap between novice nurses and senior nurses and a lack of evidence-based knowledge of novice nursing staff are the main problems that sometimes occur in these critical care units. These problems affect the transfer of knowledge between the new and existing staff. The researcher addressed these problems in this research. As knowledge becomes a central productive and strategic asset, the success of the organization increasingly depends on its ability to gather, produce, maintain, and disseminate knowledge. Developing procedures and routines to optimize the creative flow, learning, protecting, and sharing of knowledge in the organizations becomes a central management responsibility. The process of systematically and actively managing and leveraging the stores of knowledge in an organization is called knowledge management (Laudon & Laudon, 2000).

Intensive care unit nurses are health professionals whose career requires enormous amounts of specialized knowledge. The ICU, as the typical knowledge society, is the place with dense knowledge and talents. Knowledge sharing has become the most important part of human resource development (HRD) and this careers s. Through effective knowledge sharing, the existing knowledge and assets of the ICU can be optimally utilized for the benefit of critically ill patients. Despite the fact that ICU nurses are generally recognized as requiring intense knowledge, it was generally found that some intensive nursing knowledge in the hospital was deficient. For example, Oleci, Loureiro and Adriano (2013) studied knowledge about endotracheal suction on the part of intensive care nursing professionals, who showed knowledge deficits in some aspects of the procedure. In addition, Raddi,

Samson and Kharde (2009) studied knowledge and attitude regarding perinatal bereavement care among nurses in the Maternity Unit and Neonatal ICU. The results revealed that a majority of nurses had poor knowledge on the concept of perinatal bereavement. Korhan, Hakverdioglu, Parlar and Uzelli (2014) found that critical care nurses' knowledge on ventilator-associated pneumonia prevention was poor. Moreover, Kiekkas et al. (2013) found that longer professional experience and being employed in the ICU associated with higher pulse oximetry knowledge of Greek nurses. In comparison with other settings, the knowledge in an ICU is considered to be more complex. Therefore, if the ICU members want to have their knowledge shared, and make the knowledge innovation occur, effective knowledge sharing is essential. Knowledge sharing is the powerful measure assisting the ICU members to improve the efficiency of their knowledge management. This will, in turn, help improve the quality of their services.

In brief, the benefits of knowledge sharing could include sharing skills, experience and information, developing new knowledge, skills and attitudes, developing and nurturing support mechanisms, building and strengthening personal relationships, and developing a sense of feeling involved with motivating change. Furthermore, human resource expertise is crucial to the core knowledge management implementation team. Changes to job descriptions, the inclusion of knowledge sharing and exploitation in appraisal schemes, and the development of staff members affected by the knowledge-based way of working are key human resource concerns (Abell & Oxbrow, 2001). Consequently, researchers study the knowledge sharing to be ready for confronting change in the future. Knowledge sharing stimulates the innovation to be used by transferring the skills and learning between human beings.

Various studies on knowledge management have noted the difficulty of sharing knowledge in organizations. For example, Naaranoja (2007, p. 7) stated that "The knowledge sharing needs time and we should not set too tight timetables". Braun (2007) identified various factors that impede the intention to share knowledge, including team member dependencies and perceived peer pressure. Bauer (2005, pp. 11-12) revealed participants' statements regarding the obstacles to sharing their knowledge, such as "Not sharing knowledge helps to secure my position in the company" and "My colleagues act in a professional and positive manner if I share with them that I have made a mistake".

In Thailand, Hanpanich (2003) found that administrators require a higher level of needs regarding knowledge management, while in actual situations, all processes involving knowledge management, especially knowledge sharing was found to be low. Furthermore, Supachutikul (2004, p. 162) summarized three important points associated with knowledge sharing: "First, incentive system for performance review and experience sharing in a simple way is quite important at the beginning. Second, knowledge sharing may not be enough; participatory action with measurable outcomes is needed. Third, in-depth knowledge sharing is possible only among those who have direct responsibility of the particular issue. Practicing the art of questioning to get relevant knowledge is important, so that people can learn from the difference and able to develop knowledge asset". In addition, Thachang (2008) studied the predictive factors of knowledge sharing among nurses in hospitals participating in a knowledge management project. The results revealed, "first, that the factors predicting intention to share knowledge were perceived to be behavioral control of knowledge sharing, subjective norms and attitudes toward sharing. Second, the main factor predicting knowledge sharing behavior was an intention to share knowledge". (Thachang, 2008, pp. 74-75)

Although such studies have been valuable in providing us with greater insights into how knowledge sharing can occur, they nonetheless fall short in that most of the studies dealt with face-to-face environments. Moreover, the study of knowledge sharing in nursing is scarce.

Consequently, this research explored the practices of knowledge sharing in a Thai hospital ICU nursing team and studied the enablers and obstacles that may affect the knowledge sharing between experienced and novice nurses.

Research Questions

The research questions of this study were:
1. What explicit knowledge do members of a Thai ICU nursing team share with one another?
2. What tacit knowledge do members of a Thai ICU nursing team share with one another?
3. How do ICU nursing team members share such knowledge?

Literature Review

Knowledge in Nursing

Nursing is the study of caring in the human health experience. An analysis of the conceptual and syntactical structure of nursing knowledge identified four fundamental patterns of knowledge: empirical knowledge, the science of nursing; esthetics, the art of nursing; the component of a personal knowledge in nursing; and ethics, the component of moral knowledge in nursing (Carper, 1978). Nursing practice has been studied mainly from a sociological perspective. Nurses have learned much about role relationships, socialization, and acculturation in nursing practice. On the other hand, they have learned less about the knowledge embedded in actual nursing practice. A wealth of untapped knowledge is embedded in the practices and the "know-how" of expert nurse clinicians, but this knowledge will not expand and develop unless nurses systematically record what they learn from their own experience. There is much to learn and appreciate as practicing nurses discover common meanings acquired as a result of helping, coaching, and intervening in the significant human events that include the art and science of nursing (Benner, 1984). The processes of helping, coaching, and supervising include the sharing of knowledge from senior nurses to novice nurses.

The Concept of Knowledge Sharing

Knowledge sharing can be described as one of the knowledge management processes. Jackson, Hitt and DeNisi (2003, p. 405) stated that knowledge sharing is "the process promotes widespread learning and minimizes the likelihood of wasting resources to solve the same problem repeatedly". In addition, Awad and Ghaziri (2004, p. 28) described knowledge sharing as "a process of transferring human knowledge about a process or a procedure to others in the organization; ability and willingness of people to exchange specialized experience with others for the common good of the organization". Moreover, Fernandez, Gonzalez and Sabherwal (2004, p. 372) explained that knowledge sharing is "the process through which explicit or tacit knowledge is communicated to other individuals".

Based on what is known about knowledge sharing, there are some impediments that needed to be considered. Awad and Ghaziri (2004) maintained that knowledge sharing is not a straightforward process, because people are more used to knowledge hoarding than knowledge sharing. Factors influencing knowledge sharing are personality, vocational reinforcers, attitude, and work norms. The concept also considers organizational culture, company strategies and company policies. In relation to the personality factor, people who are extroverts, display self-confidence, and feel secure are more likely to share their experiences than those who are introspective, self-centered, or security conscious. Attitude and work norms also deserve attention. People who have positive attitudes, trust others, and work in a conducive knowledge-sharing environment tend to share their knowledge more than those who work in a competitive environment. Regarding vocational reinforcers, people who received them are more likely to favor knowledge sharing than those who did not. In sum, attitude, personality, work norms, and vocational reinforcers are significant, influential factors of knowledge sharing that help determine whether or not people will share their knowledge.

As a result of the different viewpoints of knowledge sharing, it has been found that every organization has its own particular patterns of knowledge sharing. Furthermore, the different cultures have a strong influence on their business abilities. In a Thai cultural context, achievement in the

Western sense would also not fit. The researcher's aim is that the results of this study will generate some new knowledge that provides the preconditions necessary for improving knowledge sharing that is suitable for a Thai nursing organization.

Research Design

The research design of this study was the constructing grounded theory that consisted of systematic, flexible guidelines for correcting and analyzing qualitative data in order to construct a theory (Charmaz, 2006). This grounded theory process started with gathering data and ended by writing an analysis and reflecting on the entire process. The constructivist research paradigm was based on the beliefs of constructivism and the ontological assumption was based on realities being practiced by a Thai ICU nursing team, which was investigated, because realities are complex and exist in people's minds (Guba, 1990).

Data Collection

In this study, purposive sampling and theoretical sampling were used to select the study participants. First, the setting selection required that the hospital must be located in the Eastern region of Thailand and have received Hospital Accreditation (HA) or International Organization for Standardization (ISO) for the ICU. Second, the participants were the nursing team in the ICU. There were 29 nurses who were the participants. They included a Head Nurse and three different levels of training: Registered Nurse 1, Registered Nurse 2 and Registered Nurse 3.

For the data collection, the researcher used an in-depth interview and created an in-depth interview guide. The researcher combined the theories of Patton (2002) and Charmaz (2006) to create the interview guide. The researcher also checked with experts to make sure that the interview guide was of high quality. A pilot study with four participants was used to confirm that the interview guide was suitable and to gain more skills in collecting the data. In the process of data collection, the researcher chose one key participant for in-depth interviewing. After the interview, the researcher analyzed the data and asked the key participant to invite other participants who had deep information about the specific data and continued doing this until the data were saturated.

Data Analysis

Before analyzing the data, the researcher managed the data by transcribing each interview and then saved it as computer files, and put all data in a folder and also copied the hard copy to back up the data. For the data analysis, the researcher used the ATLAS.ti program (Friese, 2012), which started with data coding and then moved to the initial coding. In the ATLAS.ti program, it is called open coding, followed by family coding and, finally, the researcher developed the themes. Moreover, the researcher extracted written codes and data, and then moved upward to the theoretical categories, and kept writing memos by using mind mapping throughout the research process.

Rigor of the Study and Ethical Protocol

The rigor of this study is based on the method of triangulation, with the researcher using both document review and in-depth interviews. The researcher interviewed the 29 participants at different times and different places. This is another aspect of triangulation. Another is the use of external experts to check the interpretations of the data and, finally, the researcher used peer reviewing as one of the main aspects of trustworthiness to wrap up and to confirm the data. However, the researcher had some problems in terms of not being clear about some of the interview transcriptions. The researcher did member checking to make sure in terms of the rigor of the data. Moreover, the researcher created an audit trail to retrieve the data. One important point on the issue of rigor is that the researcher was

the main instrument of this qualitative research study. The researcher made reflective notes as one way of reducing this subjective bias.

The researcher gained the approval of the Ethics Committee of Burapha University and sought the informed consent of the participants by explaining the nature of this study and asking the participants to sign the consent form. Prior to each interview beginning, the requirement for tape recording the interview was also explained, and the transcription method was noted. At the beginning of each interview, prior to focusing upon the research topic, each respondent was asked again if they were happy to participate and given an opportunity to withdraw. The researcher also maintained the participants' privacy and confidentiality of their data by coding their names, so that they would not become public. In addition, the researcher compared written field notes with interview transcripts and asked participants to read over notes and data to check for accuracy. Finally, the researcher checked her transcriptions from independent sources to ensure accuracy. When the participants had personal problems the researcher gave time to help out, providing informal feedback, and being a good listener. As well, the researcher gave some souvenirs and textbooks to participants and the ICU department.

Findings

The data analysis produced 573 open codes, which were combined to create 7 main categories of nurses' knowledge sharing: (1) **A Nurse's Necessary Knowledge:** there were 49 open-coded concepts in this category. It included the essentials of ICU knowledge, knowledge needs of ICU nurses, peak knowledge sharing in the ICU, clinical knowledge and general knowledge; (2) **Knowledge Resources:** there were 54 open-coded concepts in this category. It included gaining knowledge from experience, gaining skill and experience from daily working, people, meetings, training, computer system, documents and the organizational quality system; (3) **Method of Knowledge Transformation:** there were 56 open-coded concepts in this category. It included outstanding knowledge sharing in the ICU, sharing with ICU nurses and sharing with others; (4) **Process of Knowledge Transformation:** there were 158 open-coded concepts in this category. It included the hospital training process, the departmental training process and the training outside the hospital process; (5) **Facilitating Knowledge Sharing in the ICU:** there were 131 open-coded concepts in this category. It included essentials of knowledge sharing in the ICU, training, management, giver and receiver; (6) **Obstacles to Knowledge Sharing:** there were 103 open-coded concepts in this category. It included nursing professionals and ICU nurses; and (7) **Feelings towards Knowledge Sharing:** there were 32 open-coded concepts in this category. It included training, giver's feelings and receiver's feelings.

Discussion

The discussion will be based on answering the three research questions.

Research question one: *"What explicit knowledge do members of a Thai ICU nursing team share with one another?"*

To respond to this research question, three main categories were extracted from the findings: A Nurse's Necessary Knowledge, Knowledge Resources, and Method of Knowledge Transformation. There were five interesting components that emerged: (1) Documents from the internet; (2) Documents from the intranet; (3) Noticeboard; (4) Patient charts; and (5) Textbooks.

Documents from the internet refer to most of the documents for sharing. Nurses often use the internet, such as Google or other website addresses to search for knowledge. When they see some useful information from good references like university or research reports, they print them out and add to their patient's chart for sharing knowledge with other nurses. The documents are mainly new knowledge about diseases, operations, medicines and new health care knowledge.

For documents from the intranet, the hospital's computer database had LOTUS NOTES that every ward in the hospital was required to use. It provides several guidelines for each procedure, all of the hospital policies and the knowledge about causes, symptoms, treatment and taking care of patients. For the LOTUS NOTES, nurses rarely print the document out, because they can read the relevant information from the computer. Moreover, the other hospital programs included BDMS, which is a documentary system, and PHARIS, which is a drug program. LOTUS NOTES was most commonly shared by nurses, because the hospital required that every employee had to understand the hospital policies which were in the intranet system. Then, senior nurses instructed new nurses about how to look for information in LOTUS NOTES.

There was a noticeboard, patient charts and textbooks in ICU for sharing knowledge. They put knowledge and new information or announcements on the board located in the ward and everyone was expected to read it. ICU nurses shared knowledge from the patients' charts. When they did the change of shift report, they always used the information from the patients' charts, which included medicine sheets, doctor's progress and laboratory sheets. If any junior nurses needed to know about the results' interpretation, senior nurses explained it to them. Finally, nurses' notes from which ICU nurses produced some knowledge. Textbooks were shared in mentorship from senior buddies to junior buddies. However, about the other ICU nurses, if anyone wanted to know, she had to seek, or borrow and ask by oneself.

This study found that the use of information technology to support knowledge sharing was very popular with the ICU nurses to support their access to explicit knowledge in the form of electronic information. There were two approaches. One approach was to centralize access to information technology and knowledge management, including management systems, relational databases (RDBMS) and the Document Management System (DMS), and the hospital's computer database, using the intranet. The intranet is used in hospitals and is controlled by the limited access from outside the organization, being considered an important tool to share and learn together.

The other approach employed by ICU nurses was using information technology to access knowledge. This technology is called the internet, the Network of Network with ease, and is available everywhere, in that the internet is a channel of communication that encompasses the whole world. The internet search programs (i.e., search engines) allows for searching for information and knowledge from the internet quickly. Fernandez, Gonzalez, and Sabherwal (2004) concluded that search engines permit a user to enter relatively unconstrained terms that roughly or exactly describe the objective of their search, and return a set of websites that can potentially meet their requirements. The client can then access the websites identified through links provided in the return information. This has become one of the most indispensable tools of the World Wide Web nowadays.

ICU nurses in this study used both approaches to technology in their search for knowledge and then shared knowledge with each other by and through the computer screen. Explicit knowledge in the ICU is very important in terms of the adoption of decisions on patient care as efficiently as possible. Explicit knowledge of this inspection system is the knowledge they create and process the statutes and regulations of the hospital, and the knowledge that can be collected and transmitted clearly in various formats and which can be accessed easily. Consistent with the research of Mearns (2012), research that informs decisions is derived from mostly explicit sources, not only informing short-term conservation decisions, but also acting as secondary sources for future longitudinal studies determining long-term impacts. Wang and Wang (2012) found that explicit knowledge-sharing practices facilitate innovation and performance. Explicit knowledge sharing has significant effects on innovation speed and financial performance.

In addition, there is the role of rewards in nursing quality improvement. It is part of supporting the intention to share knowledge among nurses. This finding is consistent with the research of Hau, Kim, Lee and Kim (2013), who classified employee knowledge-sharing intentions as either being either tacit or explicit, and investigated whether the level of the determinants and their influences differ between the two. Their research model was tested with survey data collected from 2010. Their

findings revealed that organizational rewards have a positive influence on their explicit knowledge-sharing intentions. The analysis results confirmed that reciprocity, enjoyment, and social capital contributed significantly to enhancing employees' explicit knowledge-sharing intentions.

In summary, from the findings that emerged in this study, the explicit knowledge that members of a Thai ICU nursing team shared with one another consisted of documents from the internet, documents from the intranet, the noticeboard, patient charts that consist of nurse's notes, laboratory sheets, medicine sheets and doctors' progress notes, and textbooks.

Research question two: *"What tacit knowledge do members of a Thai ICU nursing team share with one another?"*

To respond to this research question, three main categories were extracted from the findings: A Nurse's Necessary Knowledge, Knowledge Resources, and Method of Knowledge Transformation. There are two interesting components that emerged from participants and were integrated in this discussion. The tacit knowledge that members of a Thai ICU nursing team share with one another were: (1) Experience, and (2) Skill.

Theme One: Experience

The first key contribution in the ICU was the nurses' experience. Working procedures vary from workplace to workplace. Therefore, direct experiences contributed to stronger knowledge, while newly graduated staff possessed insufficient knowledge. The ICU nurses were able to gain knowledge from their work experiences and their daily routines. They gained more knowledge by asking questions while working or acquired knowledge from their work experiences. Experience was also involved, as they were unable to remember all that they had learned, but they gained knowledge from their work experiences. It was also subject to each individual's determination. If they were determined to gain more knowledge, they kept asking questions while working. Mostly they talked about the cases and they shared information, not only about the patients, but also about the other experiences, the problems at work, or problems with patients' relatives.

Theme Two: Skill

ICU nurses shared skills about necessary treatments, such as assisting the physician with a lumbar puncture, and connecting the patients to the ventilator, which are desirable knowledge and skills that enabled them to handle their tasks. It was essential for them to solve problems of patients who were their responsibility, or to notify the physician of the patients' conditions. Some treatments in the ICU are not available in the general wards, such as handling the case together with the physician. ICU staff were assigned to provide such treatment if there was any case outside the ICU. They had a chance to practice and gain experience. They also needed to know the reasons for the physician's treatment and the benefits of each treatment.

Tacit knowledge is "knowledge that includes insights, intuitions, and hunches. It is difficult to express and formalize, and therefore difficult to share" (Fernandez et al., 2004, p. 376). In this study, senior ICU nurses gained their work experience by performing in their job. The main role of knowledge management in the organization of these nurses was related to each bit of tacit knowledge which nurses required to work, bringing their tacit knowledge to each task and resulting from the exchange of experience between them. However, the knowledge sharing that these nurses employed was also in the form of skills. Wang and Wang (2012) studied knowledge sharing, innovation and firm performance. It was found that tacit knowledge sharing practices facilitate innovation and performance. Tacit knowledge sharing had more significant effects on innovation quality and operational performance. In this study, the researcher found that the specialist ICU nurses had more experience and understanding related to routine and complex tasks. It is knowledge that was developed over time through experience gained from their studies, textbooks, and their instructors and from informal study which was realized in various forms that make links between what was happening
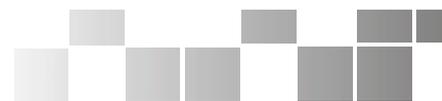
in the current situation and what happened in the past. The knowledge of the depth of experience was more valuable and clearly understood. Hau, Kim, Lee and Kim (2013) studied the effects of individual motivations and social capital on employees' tacit and explicit knowledge sharing intentions. Their findings revealed that organizational rewards had a negative effect on employees' tacit knowledge-sharing intentions. The analysis results confirmed that reciprocity, enjoyment, and social capital contributed significantly to enhancing employees' explicit knowledge sharing intentions. Additionally, these factors had more positive effects on tacit than on explicit knowledge.

In summary, the tacit knowledge that members of a Thai ICU nursing team shared with one another were experience and skill. Ozmen (2010) recommended that the importance and management of tacit knowledge should be understood and should be applied in every process of the organization. More importantly, Mearns (2012) concluded that tacit sources of knowledge abound in wildlife conservation organizations, but the value of tacit knowledge sources is seemingly unrecognized and their management is completely neglected. From the findings of this study, according to the hospital's policy of developing staff, including the Hospital Accreditation (HA), the ICU nurses shared their experience and skill to pass them on to their new nurses. There was a sense of being part of the same team whose aim was to share their knowledge effectively.

Research question three: *"How do ICU nursing team members share such knowledge?"*

To respond to this research question, three main categories were extracted from the findings: (1) Process of Knowledge Transformation, (2) Obstacles to Knowledge Sharing, and (3) Feelings towards Knowledge Sharing. There were two interesting components: (1) Strategy Nursing; and (2) People.

Theme One: Strategy Nursing

Strategies employed included practice sharing, skill sharing, experience sharing, self-study, orientation, class teaching, mentoring, meeting, change of shift report, computer program sharing, question to answer, advice, explanation, telling, asking, talking, document sharing, patient's sharing, quality system sharing, ICU knowledge test, probation assessment and feedback after sharing.

Practice sharing, including short training courses on device usage and on-the-job training. Skill sharing: Junior nurses were also educated by senior nurses on various techniques. Experience sharing: Senior nurses would like junior nurses to learn and remember from their direct experience. Self-study: Some senior nurses would like junior nurses to try seeking information. Orientation: There were training systems for new staff in relation to nursing care and the hospital. Class teaching: The ICU academic team set up a class for training. Mentoring: In the first month of the new nurses' working in the ICU, each one was paired with a senior nurse and the seniors did on-the-job training with them. Meetings included six types of meetings: There were case conferences, case studies, incident cases, collecting patients' data, monthly meetings and morning briefings. Change of shift report: Training was provided during the change of shift. Computer program sharing included three types of computer program sharing process. There were the hospital computer database sharing process, the outside hospital computer database sharing process and the teaching program computer process.

Quality system sharing: ICU nurses' knowledge sharing was based on the standard system of the hospital. ICU knowledge test: This was their opportunity to practice, review knowledge, and mutually share knowledge about all procedures. Probation assessment: The assessment was made by the chief nurse every month until passing the probation period. Feedback after sharing: Sometimes some nurses told other nurses that they were knowledgeable about the topics.

From the findings of this study, knowledge sharing has been found to be useful for facilitating work in the ICU. There were several strategies, as mentioned above. Ozmen (2010) recommended that a strategy and an action plan accompanying it should be generated together with the staff for effective implementation of knowledge management, and in this scope developing the ways of explicating tacit knowledge should be sought. Supachutikul (2004, p. 162) summarized three important points associated with knowledge sharing: "First, incentive system for performance review and experience

sharing in a simple way is quite important at the beginning. Second, knowledge sharing may not be enough; participatory action with measurable outcomes is needed. Third, in-depth knowledge sharing is possible only among those who have direct responsibility of the particular issue. Practicing the art of questioning to get relevant knowledge is important, so that people can learn from the difference and able to develop knowledge asset".

In addition, the ways of capturing, sharing and generating knowledge should be enhanced and strengthened through formal or informal meetings, excursions, exhibitions, panels, discussions, and through some others like joint problem-solving, expert-novice cooperation, reflective evaluation, and storytelling. Furthermore, the electronic infrastructure of the organization should become appropriate for effective management of knowledge in general. Telecommunication tools (e.g., internet, portals), data storage mechanism (e.g., databases, document management systems), and some expert systems facilitating knowledge management should be maintained. The technology should be provided and effective use of it should be assured. The use of the internet for E-learning, virtual conferences, and the like should be enhanced (Ozmen, 2010).

Theme Two: People

People processes included the head nurse, in-charge nurse, senior nurses, older nurses, expert nurses, fellow nurses and younger nurses.

Head nurse did the daily chart rounds and ward rounds. In-charge nurse: she was training the juniors while they were working. Senior nurses could provide consultations. Older nurses were middle level between senior and new nurses. The juniors stated that some older nurses had given them good suggestions and clear explanation. Expert nurses were specialists in each branch of nursing. ICU nurses should consult them, even if they were senior persons or not. Fellow nurses talked and shared their daily experiences with each other. Younger nurses were knowledgeable. They also talked and shared their experiences with others.

ICU nursing is all about teamwork. Teamwork and cooperation have been stressed as important in dealing with critical situations in ICUs (Wilkin & Slevin, 2004). ICU nurses are seen as having a prominent status by other nurses, because they are highly trained and have a comprehensive competency (Gjengedal, 1994). However, despite clinical experiences in the ICU offered by nursing education programs, novice nurses are often not confident in their ability to provide competent care in life-and-death situations where clinical decisions must be made rapidly (Messmer, Jones & Taylor, 2004).

ICU nurses are a human resource which is very crucial. Swanson and Holton (2009) concluded that the human being is one of the significant factors influencing knowledge management. HRD is a process of improving the performance of an organization through the capabilities of its personnel and also centers on enhancing the potential of individuals, such as their knowledge, skill, and ability in every aspect of lifelong learning Knowledge management is not only focused on development of knowledge and skill based on their routine work, but also managing the tacit knowledge of people.

In summary, ICU nursing team members shared such knowledge by using several strategies techniques with a different level of nursing chain of command in the ICU. Each staff member was provided with a specific training course. ICU nurses' knowledge sharing was based on the standard system of the hospital. ICU nurses are health professionals whose career requires enormous amounts of specialized knowledge. Knowledge sharing has become the most important part of this career.

Implications

Implications for Practice

The findings of this study focused on issues related to the sharing of nursing knowledge that is particularly important and relevant for the following two groups.
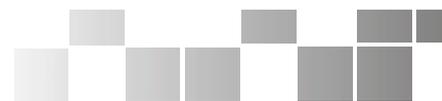
Implications for Practice of ICU #1: For ICU Nurses

Sharing knowledge among nurses in the ICU, because ICU nurses have a high level of knowledge, who are using advanced equipment in order to monitor and handle emergency situations if a patient's condition deteriorates. Therefore, the ICU is an inpatient unit that provides highly skilled and qualified nursing care for seriously ill patients. Critically ill patients who require specialized and advanced technical nursing care are admitted to the ICU. ICU nurses should be encouraged to realize the importance of sharing knowledge with each other, especially with the new nurses who have gaps of knowledge which the senior nurses may fill. Senior nurses share their knowledge with the new nurses to improve a new nurse's quality of nursing care. It is beneficial for the patient.

Nurses share knowledge, both explicit knowledge and tacit knowledge. ICU nurses are expert nurses who have high knowledge, such as tacit knowledge. Sharing tacit knowledge is difficult, but if we can make every ICU nurse have confidence and be willing to share their knowledge, especially their tacit knowledge, it will greatly benefit both the ICU nurses and ICU departments, and the benefits are greatest with the people who use the health services.

There were 22 methods of ICU nurses knowledge sharing found in this study that could be applied to ICU nurses in the context of each hospital, because each hospital has different condition of the beds, level of nurses as newly graduated nurses, middle-level nurses and charge nurses. The outstanding method of knowledge sharing was found to be mentoring. Mentoring is a good picture of a nurse who is a role model to motivate nurses to share their knowledge with the next generation of nurses. Thus, the mentor must have to meet this requirement. Mentoring methods that ICU nurses used included setting up a buddy system. When there is a newcomer they assigned a senior to help training her at work. Moreover, they employed a change-of-shift report that senior persons first demonstrated, then junior persons gradually performed such practices, starting from a simple case without many reports.

In summary, the methods for sharing knowledge with the ICU nurses was a matter of how appropriate the method was for a wide range of situations in the case of ICU nurses in a private hospital, which may be different from those methods used to share knowledge in a government hospital. It depended upon the level of specialization of nurses in the ICU, which is unlike other departments. Other departments have few situations that demand fast, intensive care to respond to at the time. Furthermore, a change of shift in an ICU means that knowledge sharing is more intensive than in a general ward.

Implications for Practice of ICU #2: For Hospitals

Administrators must be conducive to the sharing of knowledge and allocate resources appropriately. Administrators must allocate an appropriate time for nurses or may have a policy regarding the duty of care on each shift with an hour overlap for a range of knowledge sharing with each other. This is a personnel development issue that is driven by applying the knowledge sharing findings from this study.

The finding of a high resignation rate after new nurses have been employed in the ICU or in the case of not passing on the evaluations of newly graduated nurses has serious implications for hospital administrators. These problems are sometimes caused by boredom in sharing knowledge from a senior nurse to a new nurse in buddy system. During the data collection phase of the study, the researcher found that ICU nurses were in short supply and knowledge sharing in terms of the inappropriate time is a problem and became an issue of nurses' burn out and, as a consequence, a shortage of nurses. Organizations should take action on how to solve this problem, so that human resources wastage is reduced. This is very important if knowledge sharing is driven to supplement human resources. If the resignation rate of talented ICU nurses is reduced, the organization will be strengthened and the ICU nursing team will have the capacity to reach its potential.
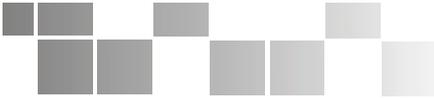
Administrators should consider incentives for staff to share their knowledge with each other by expressing their appreciation and praise for success. The rewards provide a focus on creating pride in their achievement. To make sense of their work, ICU nurses see the value of sharing their knowledge with each other.

In summarizing the findings at the organizational level, administrators should take into account how organizations are driven to achieve their goals, especially in the case of ICU nurses. Hospital administrators need to understand knowledge sharing. Knowledge sharing can lead to the development of departmental and organizational efficiency, especially in the ICU, whose staff require significant knowledge in patient care. Administrators must have the ability to encourage the sharing of human knowledge.

Implications for ICU Theory

Application of the findings in terms of the theory of knowledge sharing is highly comparable with the TUNA Model (Thai-UNAids Model) of Phapon Phasukyud (Panish, 2005), which consists of the three parts of the fish. First, the "Fish Head" means the goals of knowledge management, reflecting the Knowledge Vision (KV). Second, the "Fish Body" means knowledge exchange or knowledge sharing (KS). The last part is the "Fish Tail", which means Knowledge Assets (KA) gained from knowledge sharing.

The findings of this study extend the theory of the TUNA Model "Fish Body" which is the critical part of knowledge management. The staff members who play this role are knowledge facilitators and knowledge practitioners. The prominent TUNA Model belongs to Thailand, which was generated from the SECI Knowledge Conversion Process of Nonaka and Takeuchi (1995). In the context of this study, conducted in Thailand, selected parts of The Fish Body is a process of knowledge sharing. From the findings, it is the researcher's view that there is an issue about the uniqueness of knowledge sharing in ICU. The researcher's review of literature found that the categories were different. The researcher found that there are differences from other knowledge sharing in other places, because the ICU setting requires intensive care and is unique. The nurses must have the knowledge and high quality skills. From the findings, its nature is different from others, such as businesses. It is a different way of knowledge sharing, because the ICU is associated with the lives of people. It has an ethical dimension and also there are legal issues: if they make an error, they will be sued. The ICU nurses are very important to their organization and to their patients. They have a high level of skill and high tolerance for this condition. As a consequence, the knowledge sharing of ICU nurses is unique.

The findings of this study demonstrated that the ICU nurses' knowledge sharing is divided into three phases: Phase 1, before sharing knowledge stage consists of knowledge required and knowledge resources. Phase 2, Sharing knowledge stage consists of method, process divided into formal and informal, moreover are also relevant factors include facilitating, problems and obstacle and feelings for sharing knowledge. Phase 3, the Later knowledge sharing stage, consisted of ICU nurses maintaining proper knowledge sharing and ICU nurses' inherited knowledge to others.

Recommendations for Further Research

For future research, there is a need to extend the research questions and methods by using the findings of this study. A comparative research study, based on the knowledge sharing in a Thai ICU nursing team model in this study should be undertaken to identify data to expand private hospital concepts into other Asian countries in both public and private hospitals. Other studies should study knowledge sharing among nurses in other units and/or in other hospitals. Studies of other units in a similar context may test the limits of the knowledge sharing in nurses, and lead to discovery of additional information of knowledge sharing of nurses in the organization.

For HRD research, the findings may be used to develop a group of health care people in a multidisciplinary team to discover the knowledge sharing of the whole system by using the

database of the findings in the study of knowledge sharing of ICU nurses. The knowledge sharing in this discovery can be developed with other groups in terms of what it achieves for organizational efficiency and effectiveness.

Quality of life or work-life balance research needs to be conducted about the issues that influence nurses who are on duty for 12-hour shifts and how that practice affects nurses' ability and motivation to share knowledge with each other. To study the limits of knowledge sharing in a group of nurses that has strenuous working conditions as professionals and increases their concerns about their life is an important social issue about their quality of life and preventing professional burnout.

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